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MOTIVES FOR HIGHER EDUCATION: A STUDY OF THE ACADEMIC MOTIVATION OF SIXTH-FORMERS

Submitted for the degree of Doctor of Philosophy in the discipline of psychology in January 1979.

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ABSTRACT

The main aim of the research is to see if the extrinsic motivation model outlined by Hull and Skinner and the intrinsic motivation model outlined by Bruner, Hunt and Berlyne are appropriate for explaining behaviour within the area of academic motivation. The theory that differences in type of motivation are linked to social class (Swift, 1966) is also explored. The research concentrates on the reasons given by sixth-formers (in comprehensive schools in England and Wales) for staying on at school beyond the statutory leaving age.

In order to carry out the research, questionnaires were designed to cover the following areas:- pupils' motivation, pupils' perceptions of their parents' attitudes towards their own jobs, authority and the education of their children. Of necessity, therefore, much of the research is devoted to the problems of measurement within these areas. Information was also collected on the achievement of pupils, their aspirations for the future and their parents' occupations.

Analysis of the questionnaires (administered to over 700 sixth-formers) indicated that reasons for being in the sixth form can be divided into two broad groups; motivation derived from activities within the school system (intrinsic motivation) and motivation to be in the system derived from external influences (extrinsic motivation). Some pupils exhibit both types of motivation while others appear to be motivated almost exclusively by one or the other. Girls are more intrinsically motivated than boys, and boys more extrinsically motivated than girls. There is no relationship between father's occupation or parents' education and pupil's achievement, aspirations or type

of motivation. There is however a strong relationship between parents being dissatisfied with their jobs, being authoritarian and having authoritarian children with high extrinsic motivation. Intrinsic motivation is independent of social class and parental attitudes.

High achievers can be both intrinsically or extrinsically motivated (extrinsic motivation I), there is however a tendency for low achievement to be associated with a desire for money (extrinsic motivation II).

Type of motivation is a fairly good predictor of aspirations, particularly for university-bound pupils, who have a high level of intrinsic motivation. Extrinsic motivation I is associated with polytechnic-bound pupils and extrinsic motivation II with pupils who are entering full-time employment.

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S E C T I O N 1

Theoretical background to the research

INTRODUCTION

In a theoretical paper discussing the relationship between social class and achievement motivation, Swift (1966) puts forward two different social-class backgrounds which are likely to produce school children with high achievement motivation.

The first of these could be described as the classic "middle-class" background: "a supportive, 'democratic' family life which encourages the development of personal confidence and satisfaction of values which are accepted rather than imposed".

The second type of social background, which comes under the general heading of "working-class", is one in which: "Commitment to education was 'high' but of a very different nature to the high commitment expressed in the ideal-type middle-class family where it is valued for its liberating qualities for the individual. Instead (in the light of the 'traditional' discipline ethos) it was seen as a necessary aspect of certificate-collecting which was, in turn, seen to be the major 'external' demand of the social environment". Thus education is viewed as "socially" liberating, allowing the working-class child to be occupationally mobile.

These two types of motivation can be linked to two different psychological theories of motivation: that concerned with intrinsic and that concerned with extrinsic motivation. Intrinsic motivation is motivation inherent in the task itself (Hunt, 1960): the individual is attracted towards tasks which arouse his curiosity by their incongruity with his previous experience. The task is worked on until the incongruity is resolved, which usually involves either the modification of cognitive plans, or maps, or the development of new ones. Thus learning and motivation are task-oriented. The middle-class ethos as discussed by Swift is also

task-oriented in that it views education - the mastery of skills and the acquisition of knowledge - as valuable in its own right irrespective of any benefits that may accrue in terms of jobs. A part of the middle-class way of life is to be "cultured" and "well-informed". Extrinsic motivation, however, demands that an individual learn a task for some reward external to the task but contingent upon its completion. Thus education is not valued for its own sake but as a means to an end, that end being occupational mobility. The working-class parent sees education as the means to a desirable end, that of giving their child access to better and more secure jobs than they have had themselves.

What one wants to investigate, therefore, is whether pupils are motivated differently within the school and whether such differences are linked to social class. Attempting to do this immediately raises problems of measurement, and a large part of this research project is devoted to the measurement of both motivation and social class.

Because of the exploratory nature of the research project it is not really possible, and would, I feel, be inappropriate, to have firm hypotheses which one then tests. Rather, one is concerned with looking at a particular area, that of motivation and its relationship to social class, with a number of questions in mind. In the area of motivation the following questions are important:-

What kinds of factors motivate pupils within the school?

What are the differences and similarities between various groups of pupils?

Is a pupil's motivation exclusively intrinsic or extrinsic, or can both types of motivation be operating within the same individual?

Questions concerning the relationship between motivation and social class, on the other hand, are more easily stated as hypotheses, as these stem directly from Swift's theory: working-class pupils are more likely to be extrinsically motivated and middle-class pupils intrinsically motivated, such differences in motivation stemming from differences in parental attitudes. How social class, and particularly parental attitudes, are measured is one of the problems with which this project is concerned.

In the sections that follow there is a brief discussion of the main principles of the theories of extrinsic and intrinsic motivation, and a survey of the research concerned with the theories. The social-class literature is treated in the same way.

C H A P T E R O N E

Theories of motivation

Extrinsic motivation

If people are extrinsically motivated they learn to perform a task for some reward which is external to the task but contingent upon its completion. The nature of the task in this situation is largely irrelevant, as the impetus for behaviour is the reward to be gained for its completion. In school, for example, a pupil may complete a mathematics exercise very competently not because he is interested in mathematics but because he values the praise of the teacher.

The notion of extrinsic motivation has its roots in the work of C.L.Hull and B.F.Skinner. Hull's (1943) theory with Mowrer's (1950) important modifications can be summarized by Figure 1 (Bynner and Whitehead, 1972):

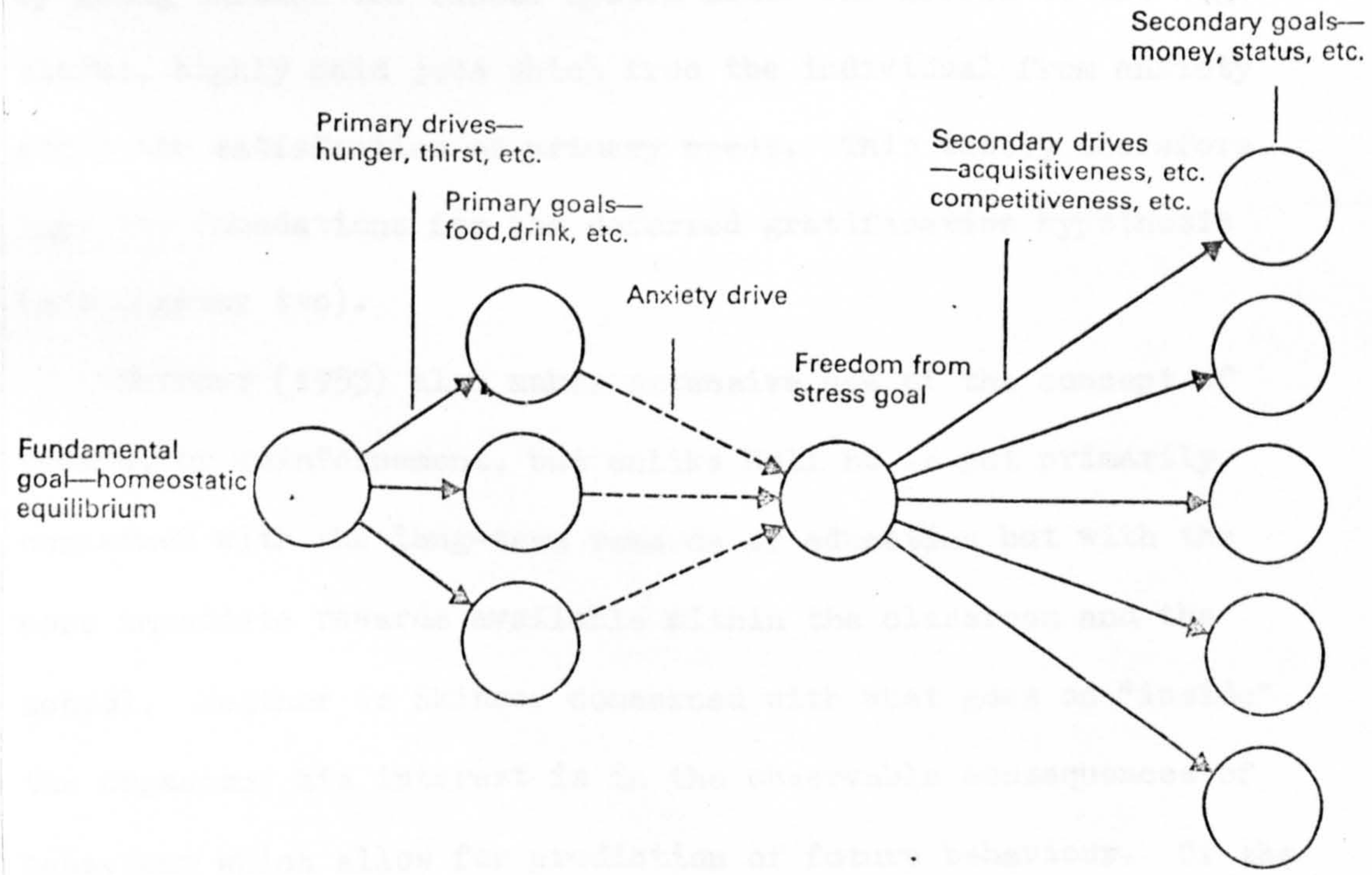

Figure 1.

Homeostatic needs generate primary drives (hunger, thirst) which are satisfied by primary goals (food, drink). These give way to a general anxiety drive (Mowrer, 1950) generated by situations in which there is a possibility that basic needs will not be satisfied.

Reduction of this anxiety is achieved by various behaviours which become identified with secondary drives or motives. These drives are themselves reduced by the achievement of the secondary goals, towards which most human activity is directed.

Thus the basic tenet of Hull's theory is that of drive reduction. Organisms are motivated to act in order to reduce painful internal stimuli; the "ideal" state therefore is absence of stimulation.

The main area of interest for the present research project is that of secondary drives and goals. The qualifications gained by going through the school system allow one access to the high status, highly paid jobs which free the individual from anxiety about the satisfaction of primary needs. This theory therefore lays the foundations for the deferred gratification hypothesis (see Chapter two).

Skinner (1953) also makes extensive use of the concept of reward, or reinforcement, but unlike Hull he is not primarily concerned with the long-term rewards of education but with the more immediate rewards available within the classroom and the school. Neither is Skinner concerned with what goes on "inside" the organism; his interest is in the observable consequences of behaviour which allow for prediction of future behaviour. Of the study of behaviour Skinner (1953) has said:-

"Every science has at some time or another looked for causes of action inside the things it has studied... There is nothing wrong with an inner explanation as such, but events which are located inside a system are likely to be difficult to observe. For this reason we are encouraged to assign properties to them without justification.... (This) practice of looking inside the organism for an explanation of behaviour has tended to obscure the variables which are immediately available for a scientific analysis. These variables lie outside the organism, in its immediate environment and in its environmental history".

Skinner's theory therefore is based on the observation of responses given to particular stimuli and has led to his formulation of a theory of motivation and learning based on the use of reinforcement. Skinner's theory is in many ways a detailed elaboration of Thorndike's (1911) Law of Effect:-

"Of several responses made to the same situation those which are followed by satisfaction for the animal will, other things being equal, be more firmly connected with the situation, so that, when it recurs, they will be more likely to recur. Those which are accompanied or closely followed by discomfort to the animal will, other things being equal, have their connection with that situation weakened so that when it recurs they will be less likely to recur. The greater the satisfaction or discomfort, the greater the strengthening or weakening of the bond".

For Skinner behaviour is learnt by each appropriate response being reinforced by some reward which is "valued" by the individual (food in the case of his animal studies, being correct in the case of a programmed learning text). Responses that are considered inappropriate will disappear from the organism's repertoire simply because they are not reinforced.

Skinner identifies two types of reinforcers, positive and negative. Positive reinforcers are such stimuli as food or sexual contact, whose presence reinforces behaviour; negative reinforcers are such stimuli as loud noises, extreme hot and cold and electric shocks, whose removal reinforces behaviour.

The method of presenting reinforcement is also important, as this makes considerable differences to the way in which the organism responds. It was found that during the learning of a task it is essential to reinforce every correct response, but in order to maintain learned behaviour, intermittent reinforcement, either interval or ratio, is much more effective, particularly if it is irregular and therefore unpredictable. What motivates the pupil, then, is the reward to be gained first of all for learning the task and secondly for continuing to produce evidence that the task has been learnt, for example, in a test or examination.

Intrinsic motivation

Intrinsic motivation is motivation inherent in the task itself, brought about by the interaction of the stimulus properties of the task with the physiological state of the organism at that time and the organisms previous experience. In the school situation the task is performed because of its intrinsic interest to the child, and the performance of the task is independent of any reward that may be given for its completion.

Theories of intrinsic motivation grew mainly out of the inability of theories of extrinsic motivation to offer a complete explanation for human behaviour. As Wall (1958) says, "Findings concerning primary motivations apply to human learning, especially in the learning of babies; but they do not suffice to account for

learning in the school situation or indeed for most of what occurs after the first few months of life, particularly in the intellectual field". It became increasingly obvious as research on motivation and learning continued that not all behaviour was governed by external rewards. Harlow (1950) showed that monkeys would solve mechanical problems when no reward was offered for doing so. Observations of pre-school children tend to suggest that "curiosity" and "pleasure in manipulation" are two of the most important factors in learning and the mastery of skills or knowledge, (Wall, 1958). Hebb (1955) pointed out that much of human behaviour (for example, doing crossword puzzles, reading novels, going to concerts, etc.) cannot be explained by external rewards. Similarly, the drive-reduction theory offers no explanation for this kind of behaviour; what primary drive is satisfied by the completion of crosswords?

It is obvious that organisms must satisfy biological needs; but the theory that the absence of stimulation is the desired goal of behaviour appears to be erroneous. This was demonstrated quite clearly by the work of Bexton, Heron and Scott (1954). They paid college students twenty dollars a day to do nothing except lie on a comfortable bed in a lighted, soundproof cubicle. To minimize their experience of sensory stimulation, the students wore goggles which prevented pattern vision, and gloves and cardboard virtually eliminated the sense of touch. They also had to lay their heads on U-shaped foam rubber pillows, which prevented them from hearing anything. This lack of stimulation produced dramatic effects in the students. Although at first they tended to sleep, after a while they became excessively bored and restless; almost any activity became attractive: they would sing, whistle, talk to

themselves, bang the cuffs together and explore the cubicle with them. Subjects suffered from hallucinations and showed impaired cognitive functioning, being unable to perform problem-solving tasks which had been well within their capabilities before the experiment started. The experimenters found it difficult to persuade students to participate in the experiment for more than two or three days, and many of them gave up before that. In this experiment the students' biological needs were satisfied and they were given a large external reward for taking part. Despite this they did not stay at the task very long. From this experiment it seems clear that the brain requires sensory information to function properly and that complete absence of stimulation is virtually unbearable.

Thus it is clear that behaviour still occurs when primary drives are satisfied (as far as can be determined) and also when no external reward is being offered; it also appears that inactivity is unbearable. In order to explain this behaviour, additional primary drives have been postulated. Harlow (1950) suggested a manipulatory drive, White (1959) a competence drive and Berlyne (1960) an exploratory drive. The problem with postulating such drives is that they have very little explanatory power: they do not give information about how and under what condition such behaviour is likely to occur. Berlyne (1963) in his work on curiosity and exploratory behaviour has gone some of the way towards providing more information. He identified the stimulus properties that arouse exploratory behaviour; novelty, surprisingness, change, ambiguity, incongruity, blurredness and the power to induce uncertainty. Berlyne goes on to make an important statement as regards these stimuli:-

"The value of these variables - how much novelty, complexity, etc., a given stimulus pattern has - will clearly vary from one individual organism to another and from time to time within the same organism, so that, to evaluate them, we must not only examine the stimulus patterns themselves but also look at what is happening inside the organism that is exposed to them". So on the one hand we have the state of the organism, and on the other stimuli from the outside world. What is needed is a theory that can link the two together to provide means of identifying the conditions under which exploratory behaviour will occur or curiosity be aroused.

Hebb (1955) provided such a theory, which became a major building block for the intrinsic motivation theory of Hunt (1960, 1965 and 1969)*. According to Hebb the basic drive controlling behaviour is a state of arousal which corresponds to an optimum level of stimulation. If there is too little stimulation the organism will seek more; if there is too much stimulation there will be avoidance reactions to reduce it. Figure 2 (Hebb, 1955) illustrates this principle:

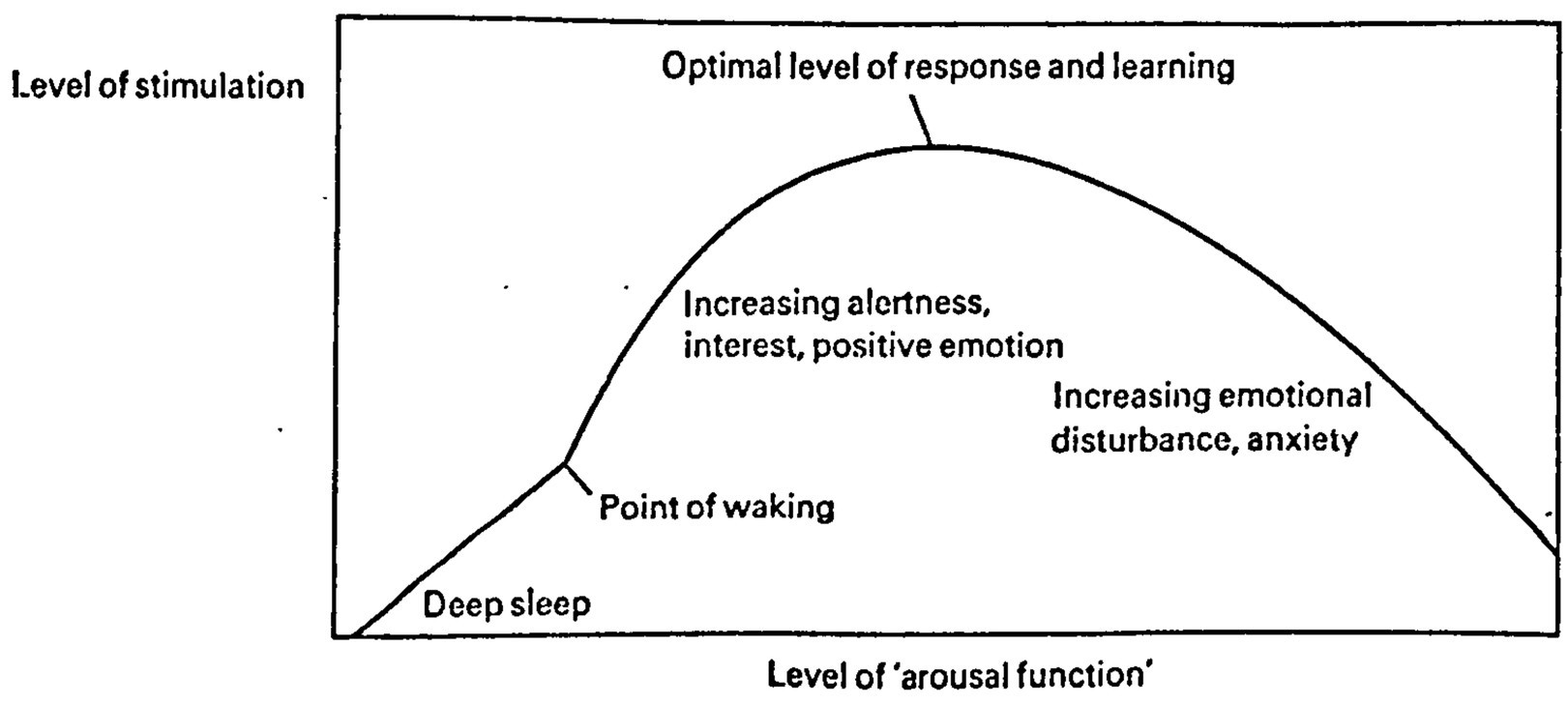

Figure 2

* I have decided to concentrate on Hunt's theory rather than Berlyne's because Hunt directed his work more towards the field of education. The two theories, however, are very similar in their basic principles.

Organisms therefore seek weaker or stronger stimulation depending upon their physiological state of arousal. Hunt builds upon this concept of an optimum level of stimulation in the following way, using the T.O.T.E. (Test-Operate-Test-Exit) model (Figure 3) to explain the process.

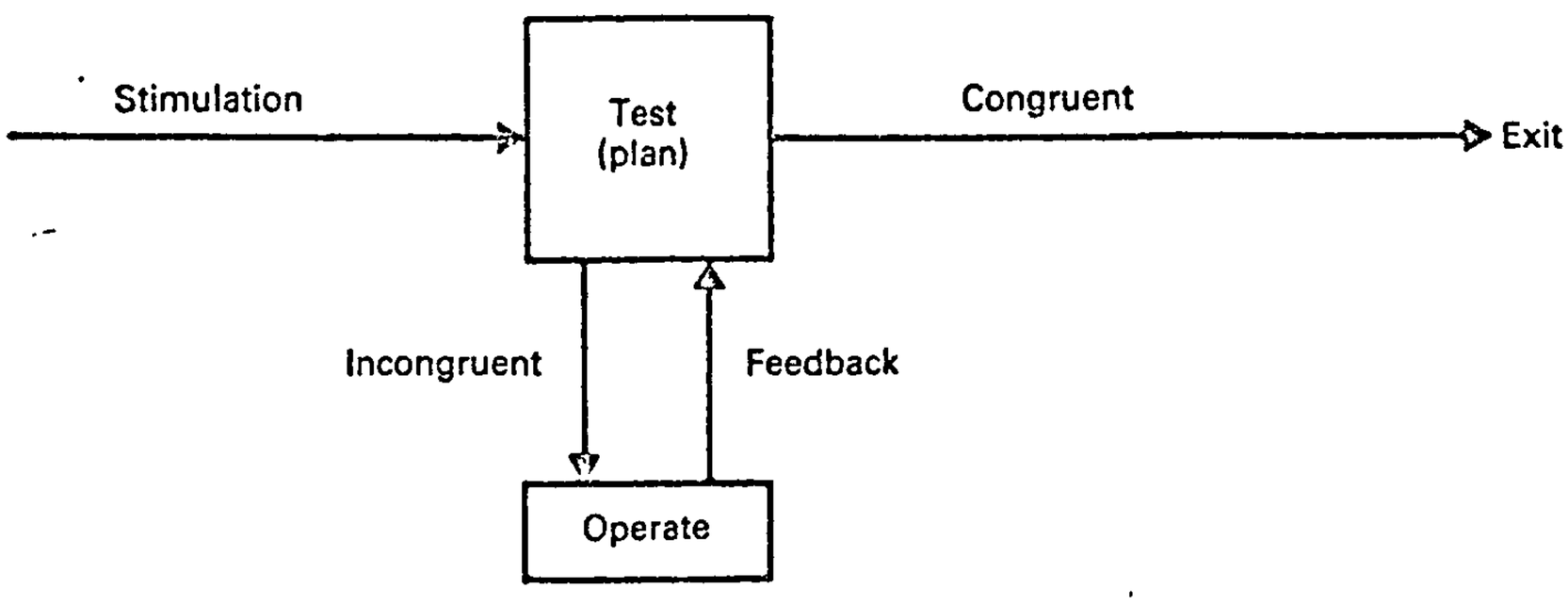

Figure 3

(based on Miller, Galanter and Pribram, 1960)

Stimulation from the environment is received by the individual, and if a "cognitive plan" based on past learning exists for categorizing the informing, then the individual will act on that plan. In other words, if the incoming information is congruent with existing cognitive plans, then action follows in accordance with past experience. If, however, no plan exists to cope adequately with the incoming stimulus information, then we test the incoming information against various plans and test out various bits of previous knowledge on the stimulus. Thus

the "feedback" loop is established between the stimulus from the environment and cognitive plans. In order to cope with this incongruous information, existing plans have to be modified, or a new plan has to be developed. If the new information is too incongruous, then it may well be ignored.

It is this incongruity between previous experience (cognitive plans) and the incoming stimulus information that Hunt has called intrinsic motivation. According to Hebb individuals seek stimulation; building on this, Hunt says that the kind of stimulation that is sought is that which is incongruous with previous experience. The attempt to understand incongruous information by the modification of existing "cognitive plans" or standards, as Hunt has called them is what motivates the individual.

Hunt identified three main plans, or standards, against which incoming information is tested. The first standard is that of comfort - freedom from pain and homeostatic need. Hunt accepts the drive-reductiсn argument that the maintenance of this standard leads to the formation of secondary goals; this type of motivation, as we said earlier, is extrinsic motivation, concerned with satisfying internal needs through the achievement of extrinsic rewards. There are two other standards, however, the maintenance of which is intrinsically motivating. The first of these is the information standard, which consists of information stored in the brain from past experience; it enables us to recognize previously encountered events and hence the level of incongruity between past experience and new stimuli. The other standard is an action standard, consisting of a repertoire of responses we have made to past events; we try these out on new events in order to test which response is appropriate.

Hunt sees the setting up and maturation of these standards as a developmental process, which can be observed in young children. He traces the following stages in the development of intrinsic motivation during the first two years of life. Shortly after birth babies respond not only to homeostatic stimuli (hunger and thirst), but to any change in the immediate environment. They make the characteristic "orienting" response towards the source of the change in stimulation, as if trying to sustain the experience of receiving it.

During this first stage of development, hand-eye co-ordination improves. These improving skills prepare the ground for the next stage of motivational development - recognition. The infant begins to recognize experience and objects he has repeatedly encountered and uses his developing physical skills to make the encounter last or be repeated. There is the beginning of an intention to meet a standard based on previous experience. Hunt sees this "recognitive familiarity" (as he calls it) as lying at the basis of emotional attachment to certain objects. At the same time the fact of recognition means that what is dissimilar or strange becomes increasingly recognizable and consequently frightening. Hence the attraction of babies to all adults changes to a fear of strangers.

At the third and final stage of motivational development repeated encounters with familiar things lose their appeal. What becomes increasingly motivating is incongruity within a context of familiarity. Incongruity becomes attractive and developing motor skills are employed to produce it. Thus the child gets pleasure from throwing objects and imitating words. The attraction of incongruity now takes over as the main impetus

for action and continues in this role throughout life. This description of the development of intrinsic motivation bears an obvious resemblance to Piaget's (1969) theory of cognitive development particularly to the processes of assimilation and accommodation.

What motivates the pupil, then, is the nature of the task itself, provided that the stimulus properties of the task have the correct amount of incongruity in relation to the pupil's previous experience. The motivational emphasis is on the nature of the task itself rather than on the reward gained for doing the task.

CHAPTER TWO

Motivation within the school system

Both extrinsic and intrinsic theories of motivation have important implications for pupils within the school. Before going on to consider these implications it is necessary to be more precise about what aspects of motivation will be considered.

Extrinsic motivation has been described as the motivation to perform some task for a reward external to the task but contingent upon its completion; intrinsic motivation as motivation inherent in the task itself. "Task" in the context of this study is defined as the acquisition of intellectual skills within the school situation. Attention is therefore directed specifically towards the motivation to acquire these skills.

Intrinsic motivation

According to Hunt's theory of intellectual development, an organism develops and modifies cognitive plans as a result of its interaction with the environment. In order to motivate pupils to develop such plans the task given to them must have the correct amount of incongruity with their previous experience; once this task has been mastered then a slightly more complex task should be presented to maintain the level of incongruity. This gradual mastery of more complex tasks allows the child to reach higher and higher levels of competence. Obviously if left to themselves children will seek out tasks that arouse their interest, but if specific skills are to be developed then the appropriate task must be presented. Thus learning situations must be designed for each individual pupil and not for the average ability of the class.

The experimental evidence to support Hunt's theory comes almost exclusively from pre-school and primary school programmes. Hunt (1969) has documented various experiments concerned with increasing sensory stimulation in the early years of childhood and observing its effects on the development of the child. The experiments have used several different ways of increasing sensory stimulation: mobiles suspended over prams; highly structured pre-school programmes at nursery school which, although they use teacher conversation with children as one element, are on the whole "material - or task-oriented"; taking pre-school training programmes into the home and involving the parents not only in talking to children but in helping them to explore and manipulate their environment. The results of most of these "enrichment" programmes show gains in scores on various standardized tests, such as I.Q. and reading readiness, over control groups.

However, the number of projects that Hunt quotes is not large, and generally there does not seem to have been much investigation into the question of what effect increasing a child's intrinsic motivation can have on his or her academic motivation and achievement.

One of the main reasons for this appears to be vastly differing interpretations of what intrinsic motivation is. For the purpose of this study it has been defined as motivation inherent in the task itself, a definition derived from Hunt. This definition, however, has not been used by other investigators, and in fact few of them have made any systematic effort to justify the definition they give to intrinsic motivation. Higgins and Archer (1968) for example, claim that children of low socio-economic status do not do well in school because the school is a

middle-class institution which does not have within its system rewards that are meaningful to the working class child. The rewards that were operating in the school were "conventional or intrinsic school rewards ... praise, grades, satisfaction, etc." The rewards stated as intrinsic in the Higgins and Archer study are therefore conventional school rewards. These rewards in the terms of Hunt could not be considered intrinsic rewards; praise and grades are evaluation of the pupil's work, while "satisfaction" could have several different meanings and it is not clear exactly what Higgins and Archer mean by it. If a child performs a task because of the desire for praise from some source or for good grades, then he is extrinsically motivated; the performance of the task is not in itself sufficient.

A similar definition of intrinsic rewards is to be found in a study by Krop (1969) who looked at the effect of extrinsic and intrinsic motivation on creativity. Intrinsic motivation was defined as being the same as the achievement need measured by the Edwards Personal Preference Scale (1959), definition of which is given below:

> "Achievement: To do one's best, to be successful, to accomplish tasks requiring skill and effort, to be a recognised authority, to accomplish something of great significance, to do a difficult job well, to solve difficult problems and puzzles (that no-one else can) be able to do things better than others, to write a great novel or play".

Using Hunt's concept of intrinsic motivation as a standard, we can see that Edwards is measuring extrinsic motivation of a certain kind. The behavioural correlates he gives of achievement motivation (with the possible exception of "to do one's best"

and "to accomplish tasks requiring skill and effort") appeal to some form of external recognition of one's achievement.

Krop, with the help of Edwards, has however raised an interesting point with regard to what constitutes intrinsic motivation. While curiosity and interest in a task for its own sake can definitely be regarded as elements of intrinsic motivation, it is open to dispute whether pride in one's work can be so regarded. Although pride in one's work appears superficially to be intrinsic motivation, under closer examination it seems to be more closely linked to extrinsic motivation. Taking pride in doing a task well can apply to any task, irrespective of whether one is interested in it. One might take pride in doing a task well because other people will see it and one wishes to be highly thought of; on the other hand, it might be simply because pride demands that every task be done well. Both of these instances are appealing to something that is not inherent to the stimulus properties of the task, but to something outside the task. Self-approval in this context is just as external to the task as is the approval of others. Intrinsic motivation, from the theoretical discussion, can be said to be "cognitive" motivation, the individual's previous knowledge in interaction with incongruous stimuli from the environment. Pride, on the other hand, could be said to belong to the emotional realm of the individual. Thus, Krop was not, as far as Hunt's definition goes, talking about intrinsic motivation (see page 29 for a discussion of his use of extrinsic rewards).

There have been a small number of studies which have used the concept of intrinsic motivation in the same way as Hunt. They have on the whole been either case studies or studies using very

few subjects; nevertheless, their findings do point to the existence of intrinsic motivation.

Scott (1967) quotes a study using only one child, and says that it is "reasonable to assume that early non-verbal play can stimulate growth in key areas of cognitive development without necessarily including encouragement and guidance from a verbal adult". His 17½ month old daughter was given a seriation toy and, without any assistance from an adult, learnt how to place the rings on the stick in the correct order. When a further ring was added which she had not seen before she was able to add it to the sequence in the correct place. This type of study, similar to many used by Piaget (1969), points to a spontaneous interest and orientation towards the task itself which is not dependent on approval from some external source.

The teaching methods of Montessori (1912) were based on the spontaneous interest of children in learning tasks. She also stressed the importance of training sensory processes and information processing. Materials were prepared and the child was allowed to work on that particular piece of material for as long or as short a time as he liked, and to move on to other material when he felt it was appropriate. It is interesting to note that although Montessori did not use the term intrinsic motivation, her teaching strategy is actually based on the principle. She exploited the child's spontaneous interest in certain materials to develop his intellectual skills. When a child had mastered a particular task (i.e. resolved the incongruity), then he would leave that task and move on to a new one which, in turn, presented him with incongruity.

In a pilot study Dreyer (1969) attempted to assess the difference in cognitive performance between children attending a Montessori nursery school and children attending a conventional nursery school. Both groups of children came from a middle-class background. Using a very small sample (14 pairs), Dreyer found that the children from the Montessori school were more task oriented; gave more physical rather than functional descriptions of objects; drew fewer people and more geometric shapes in drawings.

Karnes, Teska and Hodgins (1970) compared four programmes of classroom intervention on the intellectual development of four-year-old disadvantaged children. The effects of the programmes were assessed through pre - and post - batteries of standardized tests.

"The four classroom interventions were chosen on theoretical as well as practical bases to represent levels of structure along a continuum from the traditional nursery to the highly structured preschool. The nature of teacher-child interaction was considered to be the critical dimension of structure: as the specificity and intensity of this interaction increases, so does the degree of structure. Two programs (Traditional and Community-Integrated) represented the less structured end of the continuum; a third (Montessori) embodied an established theory which includes much that can be identified with a child-centred or traditional approach and a methodology which incorporates considerable structure; the fourth (Experimental) was the most highly structured and emphasized learning tasks chosen from school-related curricula, especially tasks designed to enhance cognitive development".

The experimental group made greater gains in intellectual functioning, as measured by the Stanford-Binet, than did the other three groups. What was surprising about the results, however, was that the children in the "traditional" programme made greater gains than those in the Montessori group - which appears to contradict both Dreyer's findings and those expected by Karnes et al.

The authors offer the following explanation for the poor performance of the Montessori group:-

> "First, the age criterion used in this study did not coincide with the optimum and earlier age for intervention advocated by Montessori. Second, a program interval of such duration is inconsistent with the relatively long-term Montessori developmental theory. Third, proponents of Montessori theory might well feel that the establishment of an adequate motor-sensory base, even during so truncated an interval and at so relatively late an age, will enhance language and cognitive development at a time beyond the scope of this report. Follow-up studies of these children may support such a point of view".

A further reason for discrepancy between the two programmes (experimental and Montessori) in the study could be that the level of teacher intervention was different. In the experimental programme the teacher structured the learning situation to suit each child's needs according to information about the child's present level of development. This was not true of the Montessori programme, where the children could choose which of the structured materials they wanted to use with no effort on the part of the teacher to guide them towards the materials that would be most appropriate for their stage of development. The difference

between the Montessori children in the Dreyer study and those in the study by Karnes et al. could be explained by a social-class difference. The middle-class children in the Dreyer study would probably be more used to having toys around to manipulate, and they therefore benefitted from the more structured "toys" of the Montessori method. But the Montessori equipment may have been too incongruous for the disadvantaged children in the Karnes study, who may have had little experience of this type of toy. However, despite their relatively poor performance in comparison with the experimental group, the Montessori children did make gains in intellectual functioning.

From the longitudinal study of Kagan and Moss (1962) there is convincing evidence to suggest that early involvement - at age 3 to 6 - with task mastery (persistence with challenging tasks, games and problems; involvement with activities in which a standard of excellence is applicable; interest in intellectual activities) is a good predictor of a high level of intellectual achievement both in adolescence and adulthood. There is therefore some evidence to suggest that intrinsic motivation, once developed in young children, will persist through the later years of school and into adulthood.

Although the work done on intrinsic motivation per se is fairly limited, work done in a related field - that of curiosity - sheds some useful light on intrinsic motivation. Bruner (1966) regards curiosity as synonymous with intrinsic motivation.

> "Curiosity is almost a prototype of the intrinsic motive. Our attention is attracted to something that is unclear, unfinished, or uncertain. We sustain our attention until the matter in hand becomes clear, finished or certain. The achievement of clarity or merely the search for it is what satisfies".

In the studies that follow curiosity is defined as an eagerness to explore new stimuli, asking questions about topics and objects in the classroom and following up, on one's own initiative, topics introduced by the teacher.

Day (1968), using Hebb's (1955) notion of an optimum level of stimulation, measured what he called specific curiosity (which "describes the aroused state of an organism when confronted by an ambiguous or unclear stimulus which may result in specific exploration") by assessing an individual's preference for complex stimuli. He found that there was a high correlation between a preference for complex stimuli and teachers' rating of their pupils along a curiosity dimension.

Greenberger (1969) reported a pilot study of an attempt to assess curiosity by the amount of effort the child took to resolve incongruity in the stimuli given. Scores on this test correlated with teachers' ratings of curiosity for boys but not for girls. Greenberger suggested that what appears to be curiosity behaviour in girls, asking questions, eagerness to use equipment, is not curiosity but approval-seeking behaviour.

Berlyne (1960) in a series of experiments demonstrated that adult subjects showed a preference for stimuli that were incongruous, complex or surprising in some way. When given a series of exposures to such stimuli, each with a greater length of time, subjects would continue to ask for exposures until they had identified the object. Berlyne concluded: "It is of interest that the subjects, without instruction obliging them to do so, persisted spontaneously in exposing the figures to themselves until uncertainty had been eliminated". He also quoted other experimental evidence (Bühler, 1928 and Alpert, 1953) which showed that the reaction of adult

subjects to unusual stimuli follows a definite pattern. The unfamiliar initially generates displeasure; then, after repeated exposures the stimuli become familiar and pleasant; finally, after further exposures the familiarity gives rise to boredom and the desire for something new.

Banks and Finlayson (1973) in their study of successful secondary school boys found that a high level of intellectual curiosity, as measured by a questionnaire, was associated with high academic attainment.

A further element of intrinsic motivation, closely linked to curiosity, is that of competence motivation which White (1959) described in the following way:-

> "According to Webster, competence means fitness or ability, and the suggested synonyms include capability, capacity, efficiency, proficiency and skill. It is therefore a suitable word to describe such things as grasping and exploring, crawling and walking, attention and perception, all of which promote an effective - a competent - interaction with the environment. It is true, of course, that maturation plays a part in all these developments, but this part is heavily overshadowed by learning in all the more complex accomplishments like speech or skilled manipulation. I shall argue that it is necessary to make competence a motivational concept; there is competence motivation as well as competence in the more familiar sense of achieved capacity. The behaviour that leads to the building up of effective grasping, handling, and letting go of objects, to take one example, is not random behaviour that is produced by an overflow of energy. It is directed, selective, and persistent, and it continues not because it serves primary drives, which indeed it cannot serve until it is almost perfect, but because it satisfies an intrinsic need to deal with the environment".

Bruner (1966) hypothesises that in order to increase a person's competence, the tasks that he is presented with must be of a certain kind: they must have a meaningful structure, and their accomplishment must be accompanied by the exercise of effort.

It could be argued therefore that elements in the environment that arouse our curiosity do so because in order to cope with them we need to extend our competence. Many of the studies quoted above could equally have been interpreted as children displaying competence motivation rather than curiosity. Perhaps what is happening is a two-stage process: initially our attention is directed towards incongruity within the environment and we become curious; in order to reduce the incongruity we have to extend or develop our cognitive plans until we have found the solution to the problem. Such persistent behaviour to resolve incongruity we could describe as competence motivation.

The individual will therefore be attracted towards an environment that provides incongruity and, according to Bruner, towards other people who can provide incongruity. He argues that there is a "deep human need to respond to others and to operate jointly with them towards an objective", a need which he calls "reciprocity". It could well be that by using these more "behavioural" correlates of intrinsic motivation, - curiosity, competence, reciprocity - one could succeed in measuring intrinsic motivation itself, a point that I shall return to in Chapter 4.

From the studies covered in this literature survey there is evidence to suggest that intrinsic motivation can play a part in the development of intellectual skills. How important intrinsic motivation is as an actual motivating force within the school however has to be determined.

Extrinsic motivation

For Hull and Skinner the acquisition of intellectual skills is not an end in itself but the means of gaining extrinsic rewards which the individual values. Pupils' motivation is increased by making such rewards contingent upon the learning of intellectual skills. What the school has to do therefore is to provide the rewards or - in the case of rewards which are outside the school's jurisdiction, such as a good job - provide the means of gaining the rewards.

The implications of Skinner's work for the school system are twofold. First, in the use of programmed learning texts and teaching machines, where the reward is that of being correct and therefore being allowed to progress to the next step. This technique of structuring the material into small steps, each of which must be mastered before the pupil moves on, can of course be more generally applied and need not be confined to teaching machines. Use of this technique, particularly with children who have learning difficulties, has been very efficacious (Moseley, 1972). The second implication, more important for the present research, is the use of generalized reinforcers within the school system such as teacher and school approval, good grades or marks, doing well in examinations, school prizes, etc., and the effect that such rewards have on the pupils within the school.

In contrast to the literature on intrinsic motivation, that on extrinsic motivation (particularly that based on Skinner's work) is extensive. All the literature in the field will therefore not be covered, but one or two examples will be given which look at "normal" children rather than those with specific learning difficulties*.

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* For a discussion of the use of Skinner's techniques in helping children with learning difficulties see Moseley (1972).

One of the most systematic efforts to identify the extrinsic rewards that operate in the classroom is that of Dunn-Rankin, Shimuzu and King (1969). They identified five groups of rewards: adult approval (teacher), peer approval, competitive rewards, independence rewards (being free to do as one likes) and consumable rewards (sweets, etc.). They were able to demonstrate that there were clear individual differences in the types of reward that children prefer.

A small pilot study* done by the present author using this questionnaire indicated that there may be social class differences in the type of reward chosen. Two classes of nine-year-old children were compared, one in a North London primary school (middle-class) and one in the East End of London (working-class). The reward most often chosen in the North London school was peer approval; this was followed by independence rewards and competitive rewards, with consumable rewards and teacher approval coming jointly at the end. The children from the East End, however, showed a very different pattern: they rated consumables as the most desirable reward, followed by adult approval, peer approval, independence rewards and, finally, competitive rewards.

In another pilot study, this time with eleven-year-old children, it was found that a high level of motivation (as measured by Entwistle's 1968 academic motivation inventory, in the version modified by Hartley, Holt and Hogarth 1971) was correlated with a preference for adult approval, competitive rewards and peer group approval.

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* Both pilot studies were carried out in connection with work for the Open University Course E281: Personality Growth and Learning.

The independence reward category threw up some interesting problems (this category contains such items as "be free to work on your own", "be free to do what you like"). In the second pilot study it was found to be the reward most preferred by the children with low achievement motivation, who perhaps viewed it in the light of "sciving off" school work. However, in the first pilot study it was the second most preferred reward in the North London school. Some of the puils in this school who chose the reward most frequently were interviewed. From their interviews it seemed as if they made this choice because there were certain projects which they liked to do on their own (painting, in the case of one girl). Thus it would seem from these two studies that this reward category is rather ambiguous: a preference for this type of reward could indicate a degree of intrinsic motivation, or it could indicate a rejection of schoolwork. This difference could be explained again by social class differences, as the children in the second pilot study were mainly working-class. Social class differences in motivation will be discussed in more detail in Chapter 3.

The rewards identified by Dunn-Rankin et al. have been used by other investigators to increase the motivation of children to learn. Becker, Madsen, Arnold and Thomas (1969) reported a case study which made contingent use of teacher approval and disapproval to get rid of undesirable behaviour in the classroom. Undesirable behaviour was ignored by the teacher and desirable behaviour (behaviour which facilitates learning) was rewarded by teacher approval. As a result of this change of policy, learning in the classroom improved and undesirable behaviour became much more infrequent.

A similar type of study was reported by Schaeffer, Harris and Greenbaum (1968-1969). This study took just one boy, who was regarded as an under-achiever, and used schedules of teacher approval, peer approval and the promise of free time to change him to one of the highest achievers in the class. The programme has been continued with other under-achieving boys in the same class.

These studies have used what can be described as "conventional" school rewards. It has been argued, however, that these rewards are not valued by all the pupils in the school, particularly not by under-achievers, and that more "unconventional" rewards should be used. Dunn-Rankin et al. showed that consumable rewards were highly valued by some pupils. Some researchers therefore have concentrated on the use of unconventional rewards. Krop (1969) found that the reward of money given on a competitive basis for the most creative answer in a test increased the number of creative responses given, particularly in the case of individuals who scored lowest on an achievement test. Higgins and Archer (1968) found that the extrinsic rewards of money, food and class trips in school time significantly increased the scores of lower-class children (defined by socio-economic status) on intelligence and achievement tests, but did not increase the scores of middle-class children. The middle-class children, however, still scored considerably higher than the lower-class children: for example, the middle-class groups' scores were higher on the pre-reward test than the lower-class groups' scores on the post-reward test.

From the study by Dunn-Rankin et al. it is clear that, for younger children at least, the conventional rewards of the classroom do motivate pupils to learn. Research done in

secondary schools (Lacey, 1970, Banks and Finlayson, 1973), also indicates that for some of these pupils the conventional school rewards are effective motivators. However, as Lacey points out conventional school rewards cannot be gained by all pupils; if the school only rewards with its approval and praise those in the top two streams, then by definition it is impossible for pupils in other streams to gain those rewards. In the absence of any other form of motivation those pupils quickly "give up" academically. It is under such circumstances as these that the more unconventional rewards have been tried. However, neither Lacey nor Banks and Finlayson looked specifically at the different kinds of reward valued by the pupils.

One of the rewards identified by Dunn-Rankin et al. was that of peer approval. Other writers have also drawn attention to the peer group as a powerful source of extrinsic motivation. Sugarman (1969), Bynner (1969) and Lacey (1970) have identified, in boys, two distinct peer group cultures within the secondary school; the pupil role or pro-school culture and the teenage role or anti-school culture. Once a pupil is committed to one group or the other it becomes difficult for him to change, particularly from the teenage role to the pupil role. The above researchers stress that the peer group is particularly important for those pupils whose attitudes towards school, and success in school, are incongruent with the attitudes and expectations of home backgrounds, (academically successful working-class and academically unsuccessful middle-class boys). For these pupils the peer group provides a reference group and therefore a valuable means of support.

There are no comparable studies on adolescent girls. Coleman (1961) in his study of the youth culture in America found that academic achievement was valued by neither sex. The valued achievement for boys was prowess in athletics and for girls social popularity. He thus concluded that peer group approval works against academic achievement. Kagan and Moss (1962) supported this conclusion; they found that academically successful men and women had both rejected the traditional sex roles as exemplified by the teenage peer-group culture. Duncan, Featherman and Duncan (1972), in a study of the aspirations of seventeen-year-old boys in America concluded that: "both parental aspirations and friends' motivation bears upon the development of motivation, and the co-efficients (in path analysis) suggest that they are about equal in importance".

It would seem, therefore, that peer group approval can be given as a reward for both academic success and academic failure, depending upon the circumstances. It is however an area of extrinsic motivation that cannot be ignored, as the motivation of certain pupils may lie in conforming to group norms or doing the same as their particular friends.

As discussed in Chapter 1, Hull's theory concerns itself with the long-term goals of education and lays the foundation for the deferred gratification hypothesis. Pupils are motivated to do well in school because of the extrinsic (secondary) rewards they will eventually gain in the form of high-status, highly paid jobs and general recognition of their achievements by the community.

The process of deferred gratification can be explained in the following way. According to Murray (1938) human beings

strive to achieve status as individuals and, having risen to a certain status level, attempt to maintain it. As most individuals cannot achieve status in every field they will select certain areas in which to concentrate their efforts. Atkinson (1957) extended this idea and said that human beings will attempt to achieve in areas that they perceive as being prestigious, but only if they think they have some likelihood of success. Thus an individual's choice may initially be a very high status area; however, if he feels that the likelihood of success is small, then he may lower his sights and choose a slightly less prestigious area in which his chances of success are greater.

Thus the whole notion of motivation is based on the individual's need for recognition of his achievements; he will therefore select tasks at which he is likely to succeed. If an individual desires a high-status job then he will attempt to maximise his chances of getting one by gaining the educational qualifications necessary. This will involve staying on at school beyond the statutory leaving age and possibly going into higher education. Thus the individual has to delay gratification (independence, and money that may be earned by leaving school as soon as possible) and plan for the future; this "future-orientation" urges the individual "to believe that planning and present sacrifices are worthwhile, or morally obligatory, in order to insure future gains" (Rosen, 1956). The future gains are the secondary rewards identified by Hull.

This notion of delayed gratification has been widely canvassed as an important explanation of why some children do well at school, particularly why middle-class children, who have this "future orientation", do better than working-class children, who do not.

One has to ask, however, how much delayed gratification is really involved in doing well at school. It is true that, in order to gain certain jobs, educational qualifications are necessary, and it does seem, on the surface at least, that pupils have to work for many years in order to obtain those qualifications. What the notion of delayed gratification ignores, however, is the rewards that are available within the school itself. Most schools give high status to those who are academically successful; thus the pupils' desire for status and recognition of their achievements need not be delayed, but will be gratified while they are at school.

How strong a source of motivation long-term goals would be if there were not other motivating factors operating within the school is open to conjecture. Skinner (1968) has argued strongly that such long-term rewards provide little motivation for pupils. He agrees that there are certain long-term goals to be gained from education, and students will often give them as reasons why they are studying, but in themselves they are not sufficient to motivate the student. He continues:-

> "The trouble with ultimate advantages is that they are ultimate. They come at the end of an education - or of some substantial part of it - and cannot be used during it as reinforcers. Their weakness is legendary. The premedical student who badly 'wants to be a doctor' gets little if any help from the fact as he sits in his room on a given evening studying a page of biochemistry. The higher wages of the craftsman do not make the apprentice diligent. The would-be pianist practicing his scales is not encouraged by the applause of the concert hall. When other reinforcers are lacking, the classical result is a profound abulia. The student is not only not diligent or eager, he cannot make himself study at all".

There is some evidence to suggest that Skinner could be right. Duncan et al. (1972), using three measures of achievement motivation based on Atkinson's work (the importance of getting on, work orientation and the individual's subjective judgement of his socio-economic achievements) concluded from a longitudinal study that: "These indices of achievement orientation in the data fail to function as strong intervening variables which are capable of explaining how social origins (or intervening achievements) affect the socio-economic status attained by the middle of the work career". Thus achievement motivation in itself is not enough to allow prediction of success or failure.

Bynner (1969) looked at the perceptions and values of pro-school and anti-school teenagers in his study on young smokers. His results showed that both groups of pupils saw school success as valuable, but smokers (anti-school group) saw themselves as academic failures and sought status through achievement in areas other than those valued by the school. This would seem to suggest that although the smokers recognized the value of education, this recognition was not in itself sufficiently motivating because they themselves were not successful within the school. It could be that the desire for the long-term benefits of education are effective motivators only if they work in conjunction with the more immediate motivating factors operating in the school. One would need therefore to look at both kinds of extrinsic rewards - immediate and long-term - in any study of motivation.

C H A P T E R T H R E E

Parental involvement and academic motivation

The relationship between parental involvement and school success is now well established. Douglas (1964), the Plowden Report (1967) and its follow-up, Bynner (1972), all show that success in school is characterized by parental interest. The present research project, however, is not concerned with parental involvement *per se*, but in attempting to identify the different attitudes and values which may lead to different types of motivation in pupils. Swift (1966) stresses that education can be valued for a number of different reasons. The value of achievement for its own sake is much more likely to be imparted by middle-class parents; for them the essence of achievement is the internalization of the motive to excel. Another group of parents, usually lower middle-class or upper working-class (for convenience this group will be referred to as working-class) tend to stress education as a means to an end, a ticket for better jobs, security of employment, more money and higher status: education is the key to social mobility. It can be argued that such goals are not stressed by the middle classes simply because their presence is taken for granted, while within a working-class community this may not be the case: employment may be sporadic and based on fluctuations within the economic system, and wages may not be guaranteed. Obviously, under such circumstances security of employment and, particularly, security of income, become important.

It has also been hypothesized that middle-class parents take for granted the value of education and assume that their children

will stay on at school as long as possible. The Gurney-Dixon report (1954) made the point in the following way:

> "One of the main influences must be sought in the outlook and assumptions of parents in various walks of life. Consider first the outlook of parents in professional occupations. Most of them themselves received a grammar school or similar education, and others have made their way into a position in society in which they find such a background taken for granted. They are all engaged on work for which a fairly high level of education is an obvious advantage and many follow professions to which a specified educational standard is a condition of entry. In the circumstances it is not surprising that they assume that their children will not leave school at 15 but will stay as much longer as their ability justifies. This assumption is not due to any conscious sense of the value of education; it may be a mere social convention which has never been questioned. But it is in any case a powerful influence on parents towards keeping their children at school, and on children towards staying".

Working-class parents, however, have no such tradition of staying on at school and cannot take for granted that their children will do so. Under these circumstances the material benefits of a good education are often stressed. These social-class differences can be summarized in the following way: for the middle classes education is the means of sustaining their way of life, for the working classes it is the means of altering it.

In Chapter One it was hypothesized that the different attitudes of parents outlined above would produce children with different types of motivation, intrinsic motivation being associated with middle-class pupils and extrinsic motivation with working-class pupils. The following section will look at the

research evidence that exists to support this claim.

Vernon (1969) suggested the following environmental factors as being important for school success:-

1. Reasonable satisfaction of biological and social needs, including exercise and curiosity.

2. Perceptual and kinaesthetic experience; varied stimulation, encouragement of exploration, experiment and play.

3. Linguistic stimulation encouraging a "formal code" and clarity of concepts.

4. "Demanding" but "democratic" family climate, emphasizing internal controls, responsibility and interest in education.

5. Conceptual stimulation by varied environment, books, television, travel etc.

6. Positive self-concepts with realistic vocational aspirations.

7. Broad and deep cultural and other leisure interests.

Two points can be made about this list which are relevant to the present study. Firstly, that many of the conditions listed above are likely to foster the development of intrinsic motivation - notably one, two, five and seven. Secondly, these conditions are more likely to exist in middle-class rather than working-class homes.

Cohen (1968) looked at the relationship between socio-conceptual styles and orientation to school requirements. He identified two broad types of conceptual style - analytical and relational. The characteristics of these two styles which are relevant to the present study are given in Table 1.

Table 1

Analytical	Relational
Mode of abstraction is stimulus-centred	Mode of abstraction is self-centred
Sensitivity to parts of objects	Sensitivity to global characteristics
Psycho-physical judgement requiring selective attention good	Psycho-physical judgement requiring selective attention poor
High ability to detect changes in monotonous but constantly changing perceptual field over a long period	Low ability to detect changes in monotonous but constantly changing perceptual field
Concern for intellectual mastery	Little confidence in ability to solve intell-ectual problems
High perceptual vigilance notices small changes in moving stimulus	Low perceptual vigilance
A willingness to listen attentively, to differen-tiate subtle meanings in words, a desire to look for reasons and processes and to take directions and compare results	Primary focus on self, not on stimulus
Preference for complexity	Preference for simplicity
Reflective attitude	Impulsive
A tendency to differen-tiate experiences	Less likely to differentiate complex stimulus situations
Analytical abstractions	Descriptive abstractions
Field-independent	Field-dependent

The overwhelming impression from this study is that individuals with an analytical conceptual style are stimulus - and task - oriented and have a preference for complex stimuli, characteristics which are associated with intrinsic motivation. Individuals with a relational conceptual style are more concerned with self than with tasks and are less sensitive to changes in the environment. Cohen found that an analytical conceptual style correlated with being middle-class and also with a higher level of academic achievement.

Kohn (1959) found that significantly more middle-class than working-class parents valued curiosity as a trait in their children. It would seem therefore that middle-class children are more likely than working-class children to develop intrinsic motivation, not necessarily because their parents actively encourage its development but because they provide an environment which fosters its development. Working-class children however are more likely to have encouragement of a very different kind.

Douvan and Adelson (1958) found that some upwardly mobile working-class boys were motivated by a strong competitive drive for money and status which had been inculcated by the family and which often went hand in hand with an authoritarian personality.

Ackerman and Jahoda (1950) pointed out that many families who wanted their children to be upwardly mobile would stress competitiveness. "Most of the mothers of our cases ... apparently did not tell their children 'be happy', but rather 'make money, outdo your father, get a good job'." For these parents, success was measured by comparison with others rather

than by actual achievements. Banks and Finlayson (1973) found that working-class parents were strongly aware of the value of educational qualifications and were bitterly disappointed if their sons did not take advantage of the opportunity to gain them. Parents often urged their sons to do well at school so that they would not end up in the same kinds of jobs as they have.

Kline (1965) reports similar findings for both boys and girls with working-class parents: these parents believed that education was the only route to better jobs.

Kahl (1953) compared working-class boys who wanted to go to college with those who did not. Interviews revealed that "although there was a common way of life which identified the common-man class some members were content with the way of life while others were not". Discontented parents, seeing education as a way out for their sons, tended to train them to take school seriously. "Only sons who internalized such values were sufficiently motivated to overcome the obstacles which faced the common-man boys in school; only they saw a good reason for good school performance and college aspirations".

Elizabeth Cohn (1965) in her study of upwardly or downwardly mobile boys, identified certain factors that contributed to mobility; her main conclusion was that there was an especially high chance of a boy being upwardly mobile if his father, although high earning, was dissatisfied with his job, and if the mother was a white-collar worker, or if she was downwardly mobile from the middle class.

Kohn (1963) looked at the difference between working-class and middle-class parents in relation to authority, and his

findings have implications for the development of extrinsic motivation. Working-class parents want their child to conform to external authority because the parents themselves are willing to accord respect to authority, in return for security and respectability. Kohn further expands this point in relation to the area of locus of control:

> "Working class parents' values centre on conformity to external proscriptions, middle-class parental values on self-direction. To working-class parents it is the overt act that matters: the child should not transgress externally imposed rules; to the middle-class parents it is the child's motives and feelings that matter: the child should govern himself".

These differences Kohn (1966) found to be true not only of American families but also of Italian ones. Kohn (1959) also found that working-class parents valued obedience to them as a trait in their children more highly than did middle-class parents.

Himmelweit (1955) found that teachers who came from working-class backgrounds tended to be more authoritarian than middle-class teachers. Jackson and Marsden (1962) found that working-class teachers were often "rigidly orthodox and wished to preserve a hierarchial society".

These findings are supported by evidence from studies of child-rearing practices. Newsom and Newsom (1970) found that middle-class mothers' control ideology centred around democratic reciprocity, with its emphasis on courteousness and consideration for others; working-class mothers, however, tended to stress the "natural authority vested in adults in which the child is always made to do as he is told".

Bernstein (1971) put forward a theoretical framework to explain control ideologies very similar to that outlined by Newsom and Newsom. He postulated three modes of control: the imperative (simple orders); the positional (instructions and explanations in terms of status position, such as age and sex); and the personal (instructions and explanations in terms of the particular skills and characteristics of the child and the relation of his behaviour to other people). Bernstein hypothesized that working-class parents would be more likely to use the imperative and positional modes of control, while middle-class parents would tend to use the personal. Cook-Gumperz (1973) empirically tested this hypothesis and largely confirmed Bernstein's theory. There was no simple one-to-one relationship between social class and mode of control, as all three modes of control were used by both social classes; however, middle-class mothers used the personal mode most frequently, and working-class mothers the imperative and the positional.

According to this research then, respect for and conformity towards authority is more likely to be stressed by working-class homes than in middle-class homes. This emphasis on external agents as the arbiters of behaviour could well lead working-class children to value rewards that are conferred by external authority - the praise of teachers and peers and the recognition of their status and achievement by others. It could also be true, in line with Skinner's argument (1968) that they do well at school to avoid the displeasure of people in authority such as parents and teachers.

If working-class parents see education as a valuable commodity they will be anxious for their children to do well at

school and may put considerable pressure on them to succeed. Under such pressure pupils may be motivated to achieve good marks and school reports and to have a high class position, because these represent evidence of success of which their parents will approve.

Both Banks and Finlayson (1973) and Epps (1970) have stressed that parental pressure can either help or hinder achievement in children. Reward for success will probably help children to become high achievers, but punishment for failure often leads to lowered achievement because of the anxiety it raises, and can also lead to very strained parent-child relationships.

Parental influence therefore can be important in the development of both intrinsic and extrinsic motivation. Intrinsic motivation will develop in a stimulating environment particularly if parents encourage their children to explore and be curious about that environment. Parents can also be a very strong force in encouraging their children to be extrinsically motivated by stressing the value of status and money, and bringing pressure to bear on them, through the medium of parental approval, to succeed in school.

S E C T I O N 2

Operationalization and measurement

of the variables

S E C T I O N 2

Operationalization and measurement of the variables

C H A P T E R F O U R

Motivation

The main aim in measuring pupils' motivation is to see if it is possible to identify two different "types" of motivated pupils, intrinsically motivated and extrinsically motivated. In order to do this one would first of all have to assume that the pupils were actually motivated in their school work. Pupils who stay on at school beyond the statutory leaving age can reasonably be assumed to have reason for so doing. On these grounds therefore it was decided to look at the motivation of sixth-formers.

The method of measuring their motivation had then to be decided. The most satisfactory method, as one cannot directly observe motivation, is to ask people about their motives, either by interviews or by the use of questionnaires. Both these methods of collecting data have their advantages and disadvantages.

By the use of in-depth interviews a great deal of information can be gained about particular individuals. However, interviewing a large number of pupils is extremely time-consuming; if, on the other hand, one has a small number of pupils, then the generaliz-ability of the results is limited. Interviews can be extremely flexible: the interviewer can make sure that the respondent has understood the questions and can follow up areas that are relevant, making it possible for new aspects to emerge. Above all, face-to-face contact can build up a rapport which will keep the respondents interested and co-operative to the end of the interview.

There are, however, obvious disadvantages to interviews, particularly those of bias and selection. The interviewer may

lead the respondent to give answers that are in line with his or her particular views, or by selected reinforcement may lead the respondent to give one piece of information rather than another. Finally, there is the problem of reliability: different interviewers may emphasize different areas even when given a strict schedule, and a particular interviewer may not be consistent from day to day.

The advantages of using a questionnaire are that a large sample can be used and the data can be collected in a relatively short space of time. Problems of reliability are reduced because all subjects answer the same questions, given to them in the same format. The disadvantage is that one may be losing information because respondents are forced to answer only the questions asked; however, if a questionnaire is well designed it should cover all the relevant areas (Oppenheim, 1966).

One further practical problem has to be considered in choosing the method of measurement, and that is access to schools. Clearly school staff are likely to be more co-operative if one is going to take only a small amount of their time - which is another argument in favour of questionnaires. Interviews would considerably disrupt the school timetable for those pupils involved, and would also mean that the interviewer had to spend a long period of time in the school. I decided therefore to use a questionnaire, as this would allow the use of a large sample and would probably maximise the chances of being admitted to schools.

As no suitable questionnaire existed, one had to be designed. A series of interviews of small groups of sixth-formers was used for this purpose. The questionnaire was to be

administered by the author as this would ensure similarity of presentation, allow for queries to be dealt with and allow the researcher to establish some degree of rapport with the respondents by explaining the research project.

Before the questionnaire is designed, some consideration must be given to its format. Two broad alternatives are available. One may use some form of forced-choice technique either paired comparisons (where every item is paired with every other, as in the Allport-Vernon (1969) Study of Values); or by giving two different alternatives each time, one measuring intrinsic motivation and the other extrinsic motivation, the subject being asked to choose which one of the statements is most like him or her (the Rotter scale (1966), which measures internal-external locus of control, is a good example of this format). The second alternative is that of allowing the subjects to respond to every item separately using a Likert scale; thus subjects place their reactions to a statement on a five-point scale running from "strongly agree" to "strongly disagree", with a neutral category in the middle. This procedure can obviously be modified to the simpler format of "true", "false" and "don't know", if that is a more appropriate way of responding to the questions being asked.

There are two main problems in using any form of forced-choice, or ipsative, measure. The analysis of data collected in this way presents certain problems which have been well documented by Hicks (1970). Any test can be considered at least partially ipsative which "produces intra-individual assessment of variables of a type such that a score elevation on one attribute necessarily produces a score depression on other attribute(s)" (Hicks, 1970). Given this definition, both methods of paired

comparisons outlined above are ipsative measures. It is not necessary here to rehearse the arguments that Hicks put forward, but the conclusions that he and other writers have reached will be briefly summarized. Allport and Vernon (1931) stated that intercorrelations among scores which are interdependent, as in ipsative measures, are not strictly legitimate. Guilford (1952) noted that intercorrelations of attribute scores on an ipsative test tend to be artificially negative. Under these circumstances the use of factor analysis with any ipsative measure becomes a dubious process.

In addition to the problems of analysing ipsative measures, there is also the problem of interpreting the scores. In the Allport-Vernon Study of Values, for example, it does not appear to be valid to make the assumption that a low score on the sociability dimension means that an individual is not interested in being sociable; all one can conclude is that he is less interested in this than in other things. Whereas it may be acceptable to use ipsative measures to look at an individual's profile, it is much less acceptable to sum together scores on such scales for the comparison of individuals or groups. Clemans (1966) was highly critical of the use of ipsative scores, particularly with reference to the use of correlation analysis on such measures, and concluded that "absolute measures may in some instances be more difficult to obtain than ipsative measures but as long as the less difficult approach is not the optimal approach it can only be considered as a temporary solution".

The other problem of using a forced-choice measure is the effect that this has on the respondents. They may find themselves being forced to choose between two alternatives which seem

equally acceptable or unacceptable, and their frustration over this may make them hostile to the whole exercise. This is hardly a desirable state of affairs if one wants their co-operation. Thus the problems of analysis and interpretation seem to make the use of this technique undesirable, particularly in this study which aims to test whether it is appropriate to describe people as either mainly intrinsically or mainly extrinsically motivated. Using forced choice assumes a uni-dimensional model: if one forces pupils to choose between items measuring intrinsic and extrinsic motivation, then one will inevitably end up with people in these two categories. This however may be a totally false dichotomy, as there may be some pupils who are both intrinsically and extrinsically motivated.

I decided therefore to use some form of Likert Scale for the questionnaire, as this does not present difficulties of analysis. As the motivation questionnaire was concerned with asking people about attributes which they felt were characteristic of them, the simple format of "true", "false" or "don't know" was felt to be the most appropriate.

In order to carry out interviews it became necessary to decide on the composition of the main sample so that the pupils interviewed for the purpose of designing the questionnaire would have the same characteristics as those used in the main sample.

The type of school that pupils attend may well affect their motivation. For two reasons, however, it was decided not to use "type of school" as a variable: firstly, the main aim of the research was to see if it is possible to identify the two different types of motivation, and it would seem premature at this stage to see if type of school has any influence on the development of

different types of motivation if these different types do not exist; secondly, the size of sample needed to include type of school as a variable, as well as all the other variables, would be well beyond the scope of a single researcher. Obviously, one could include type of school if other variables such as sex or home background were excluded. There are good reasons, however, for not excluding those variables. Previous research has suggested that home background is an important variable in the development of motivation; it might therefore be important in the development of different types of motivation. Many studies on motivation and academic attainment have concentrated on boys only - for example Lacey (1970), Banks and Finlayson (1973) - with the result that relatively little is known about the process of academic attainment and motivation in girls. For this reason both sexes were used in this study.

As type of school is not to be used as a variable it must, as far as possible, be controlled. It was decided to use only comprehensive schools, mainly because there are more working-class pupils in the sixth form of comprehensive schools* than in grammar schools, 51% as opposed to 34% (Schools Council, 1970). This means that the social classes should be evenly distributed in the sample. The interviews therefore took place in two comprehensive schools.

Intrinsic motivation

In designing the questionnaire, information was used from the following main sources:

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* See Chapter 8 for a discussion of how the main sample was selected.

a) interviews with sixth formers

b) previous work done in the area, both theoretical and practical

c) previous questionnaires which had some relevance for the present study

In Chapter Two three "behavioural" manifestations of intrinsic motivation were considered: curiosity, competence and reciprocity. Thus we would expect an intrinsically motivated pupil to be attracted towards subject matter because it is incongruous with his previous knowledge - intellectual curiosity; to display persistence in studying this material in order to resolve the incongruity and thus expand his knowledge - competence motivation; and to seek out individuals with whom he can discuss and explore ideas - reciprocity. Comments made in the interviews suggested that these were meaningful concepts to sixth-formers, although they were not expressed in the same terms. Many of the pupils said that they enjoyed the work they did; that they liked the challenge of some of the work; that they would often read up things in their own time; that they would in some cases follow up work that was not on the syllabus but which interested them; that they enjoyed talking about ideas with other people.

The following items were therefore designed to measure the three areas outlined above, based on the interviews with the sixth-formers:

<u>On curiosity:</u>

1. If a particular topic interests me I will follow it up in my own time.

2. I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.

3. I like to read a lot of books covering widely differing subjects.

4. I enjoy reading plays, novels and poetry.

On competence:

1. I feel pleased with myself if I work out the correct solution to a difficult problem.

2. I get disheartened and give up easily if something is too difficult for me.

On reciprocity:

1. I like to work with people who are interesting and full of new ideas.

2. I enjoy discussing new ideas in my subject area with other people.

3. I enjoy being part of an enthusiastic group of people working on a project.

As stated earlier, no previously designed questionnaire was completely suitable for the study. However, questionnaires have been designed which have some relevance to the concept of intrinsic motivation, so these were looked at to see if some items could be used. Banks and Finlayson (1973) as part of their research on school achievement used a scale to measure intellectual curiosity; as this scale was designed for third-formers, most of the questions as they stood were inappropriate, but three out of the fifteen items were modified so that they could be used.

On curiosity:

	Original item	Modified version
1.	Going to scientific exhibitions	I enjoy visiting museums, art galleries and exhibitions
2.	Reading about the latest scientific discoveries and inventions	I enjoy reading about the latest scientific theories and inventions

On competence:

Original item	Modified version
Working out answers to complicated problems whether they seem useful or not	I enjoy working out the solution to a complicated problem just to prove to myself that I can do it

Using Bruner's definition, the last of these items is measuring competence rather than curiosity, although Banks and Finlayson used it to measure curiosity. It is not always easy in practice to separate curiosity from competence, as they do appear to overlap to some extent. The work on syllabus-bound/syllabus-free students also yielded some helpful information. According to Parlett (1970), the syllabus-bound student is more orientated towards exams than other students and less likely to be governed by strong personal interests and commitments; he is only happy when working within the confines of a given syllabus. The syllabus-free student exhibits the opposite characteristics, being most happy when pursuing his own line of thought. As there would appear to be some overlap between syllabus-bound students and extrinsically motivated students, and between syllabus-free students and intrinsically motivated students, some of the items from a questionnaire designed to measure the extent to which students were either syllabus-bound or syllabus-free were used. The questionnaire was the one used by Josephs et al. (unpublished) which is an amalgamation of Hudson's (1968) and Parlett's (1970) questionnaires.

The following items were used as they stood to measure intellectual curiosity:

1. I would rather pursue my own ideas than follow a syllabus.
2. I find school work restricting and would prefer more freedom of choice.

3. I spend too long on certain topics because I get very interested and involved in them.

The following items were modified so that they could also be used to measure curiosity.

	Original item	Modified version
1.	I prefer straight forward tasks to those calling for initiative or originality	I prefer tasks that call for originality or initiative rather than those that are straightforward
2.	I work hard at all subjects, even those which do not interest me at all	When studying a subject I am really interested in I find I work harder
3.	I do not read much outside my school subjects	I read a lot outside my school subjects
4.	I prefer to be taught by the teacher, rather than be left to discover things for myself	I would rather be left to discover things for myself than have everything told to me by the teacher

The following item was used as it stood to measure competence.

1. I enjoy the challenge of doing something new and difficult.

There were therefore in total 20 items aimed at measuring intrinsic motivation.

Extrinsic motivation

Following from the discussion in Chapters Two and Three it can be said that there are three main ways in which pupils can be extrinsically motivated in school and they may or may not be linked together. One is because of external pressure being placed on the individual by influential others, the two main groups being parents and friends (conformity to peer-group pressure). Some of the interviewees gave "parents wanted me to stay on" as a reason for being in the sixth form; they themselves were not hostile to the idea of staying on at school but they

were not very enthusiastic about it either. The second type of extrinsic motivation is when the pupils themselves want the long-term advantages that an education in the sixth form can give them in terms of better job prospects, with more money and higher status. Finally there is the desire for the immediate extrinsic rewards that the school offers denoting achievement that can be readily seen and recognised by other people: good examination results, the winning of school prizes, gaining the highest marks for a piece of work.

Such rewards can be valued for a number of reasons: because it shows to parents that the individual is successful; because it will give the individual high status and recognition within the school; or, finally, because doing better than other people is satisfying to the individual.

Since extrinsically motivated pupils are in the sixth form because of the external benefits an education can give them, not because they are particularly interested in the pursuit of knowledge for its own sake, it can be hypothesized that they will have a much lower level of intellectual curiosity than intrinsically motivated pupils and, like syllabus-bound students, they will prefer a clearly defined set of tasks to work on.

Items were designed therefore to cover the three areas mentioned above (external pressure, long-term rewards, immediate rewards) and also to measure a preference for clearly defined tasks. The first group of items were designed on the basis of interviews.

On parental and peer-group pressure:

1. I stayed on in the sixth form mainly because my parents wanted me to.

2. Without pressure from my parents I do not think I would have stayed at school.

3. I didn't particularly want to stay on at school and go into the sixth form but my parents insisted that I did.

4. I stayed on at school because I did not want to be different from my friends.

5. I decided to stay on in the sixth form because that was what most of my friends were doing.

On rewards within the school (competitiveness, recognition of achievements, importance of examinations and high marks):

1. I find I work best in a competitive situation particularly if there is a good chance of coming out on top.

2. I enjoy feeling I can do things better than anyone else.

3. I like other people to recognise my achievements.

4. I usually study only when I am required to, in order to pass exams.

5. Without the stimulus of exams I doubt whether I would do much studying.

6. I get worried if my classmates get better marks on set work than I do.

Josephs et al. (unpublished) also provided some useful items to measure extrinsic motivation. The following items were used to measure preference for clearly defined tasks and concern with examinations (all in their original form):

1. When work is set I like to be given a clearly defined task, preferably with the reading I have to do specified.

2. Good exam results are the most important outcome of one's academic career.

3. I try to keep to set work and avoid following up interesting side lines.

4. Whether I like a subject or not I do my best to get a good mark.

5. I try to give each examination subject, whether I like it or not, equal emphasis.

On competitiveness:

1. I play any game to win, not just for the fun of it.

The final group of items to measure extrinsic motivation were concerned with the job characteristics that extrinsically motivated pupils might value; and on how much they saw education as a means to a job rather than an end in itself. All of these items were designed by the author, based on interviews.

1. I would very much like to have a job which will give me high status within the community.

2. I would rather have a job which pays a lot of money but is only slightly interesting, than one that pays a small amount of money but is very interesting.

3. How much prestige a job had would be the most important factor in determining whether or not I would take it.

4. How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.

5. If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.

6. I sometimes wish I was out at work earning money rather than studying.

7. I would still think my education had been worthwhile even if I could not get the job I wanted when I finished.

Finally, to contrast with the above items, two items were added which would indicate a preference for an interesting and intellectually stimulating job, rather than for jobs which confer status or money. As these items were about the job itself rather than the external benefits gained by the job, they are more likely to be indicators of intrinsic motivation.

1. I would very much like to have a job that is intellectually stimulating.

2. How interesting a job is will be the most important factor in determining whether or not I would take it.

The motivation questionnaire therefore contained twenty-two items aimed at measuring intrinsic motivation and twenty-four items aimed at measuring extrinsic motivation.

C H A P T E R F I V E

Social Class

Much of the research in education concerned with social class has measured the latter by father's occupation, using the classification of occupations published by the Office of Population Censuses and Surveys (1970). Such a method of measurement is entirely appropriate for some research, as father's occupation provides "the best shorthand method for summarizing the individual's cultural beliefs, his definitions of life problems and possible solutions, the meanings of his language and his culturally learned conceptions of the teacher, himself and the school" (Swift, 1968). Using father's occupation in this summarizing way has brought to light certain relationships between social class and education which show that chances of success in the education system are not equal for all social classes even when ability (measured by intelligence tests) is held constant (Floud, Halsey and Martin, 1956; Crowther report 1959-60; Newsom report 1953; Douglas, 1964; Swift, 1965). Once that kind of relationship has been established, it becomes necessary to ask a different question: why does social-class background make such a difference? Clearly, the difference is not "caused" in any direct sense by the father's occupation, but by some or all of the variables that "father's occupation" usefully summarizes. Most attention has been given to two of these variables - parents' attitudes towards and values concerning education; these are important for the present study because as Swift (1966) says: "We can consider the value system of different social classes to be the learning environments which participate in the development of motivational and achievement levels".

Measuring father's occupation will give some information about the relationship between social class and motivation (and for that reason it is used in this study); it cannot, however, tell us anything about the parental attitudes and values which may have produced that motivation. As the study is concerned with whether in fact different parental attitudes and values, linked to social class, do produce children with different types of motivation, it is necessary to measure these attitudes and values. Knowing father's occupation, or even parents education, is not enough; we want to know which particular attitudes and values are important in producing children with the motivation to achieve in school. In attempting to do this, one is confronted with the same sort of problems as arise when one is attempting to measure motivation - that the data can be collected either by interviews or by questionnaires. It was decided once again to use a questionnaire, for the reasons outlined in the previous chapter.

It was decided also not to ask the parents directly about their attitudes but to ask the pupils how they perceived their parents' attitudes. The attitudes that the pupils assign to their parents will depend on their interpretation of these attitudes. It was felt that this was a more satisfactory way of assessing the influence of parental attitudes, as parents can have many attitudes, some of which may not be transmitted to their children. If the child assigns a particular attitude to his parents, then this must be because he is aware of it. MacDonald (1971), in a study of internal-external locus of control, used this technique to ask his subjects about how their parents behaved towards them during their childhood. He cites a study by

Devereux et al. (1969) who also used this technique and who reported that "comparisons of both children's and parent's responses with direct observations of actual parent behaviour showed generally convergent results". Devereux also found that correlations of children's and parents' responses were positive, though in some cases rather low. The low correlations could be accounted for by the fact that parents have a tendency to skew their responses towards socially acceptable norms. Devereux and his colleagues concluded that "there is at least some ground for believing, therefore, that the children's candid accounts may in fact be more valid than those which might be obtained from parent interviews".

Ideally it would be best to have the questionnaire filled in by both parents and pupils, but the organization involved in giving a questionnaire to the full sample of parents for the main study (approximately 2,000 in England and Wales) was felt to be beyond the scope of the present research project both in terms of time and resources. From the discussion above, however, it could seem that not only is it more practical to ask pupils to give their perceptions of their parents' attitudes but it is also likely to produce more accurate information.

From the literature discussed in Chapter Three, four main areas of importance can be identified in which parents from different social classes may have different views. These are: attitudes towards education and the value it has for the children; the personal attributes they think it is desirable for their children to have; a general philosophy of life which can be described as the "Protestant ethic" - the value of hard work and getting on, deference to authority and respect for status;

and their attitudes towards their own jobs. Items were designed to cover all these areas, based either on previous work or on interviews. The latter were mainly concerned with parents' attitudes towards education and their job aspirations for their children.

Items designed to measure pupils' perceptions of their parents' attitudes towards the value of education were:

1. I should have a job that gives me the security of a steady income.

2. I should have a job I personally find interesting.

3. While still at school I should try to make detailed plans about my career.

4. A good education is the only way of improving your standard of living.

5. Children should be given every encouragement to stay on at school.

6. Staying on at school is a waste of time.

7. People who do not take advantage of the opportunity to stay on at school are foolish.

8. I should be happy in the job that I do.

Items concerned with a general philosophy of life were:

1. You can achieve anything you want provided you work hard enough.

2. People in authority make rules for good reasons and therefore they should be obeyed and not questioned.

3. As long as people do their best, it does not matter if they do not do as well as other people.

4. Life is so short that having a good time is more important than anything else.

5. I should not argue with adults.

6. I should make up my own mind about things.

7. I should try to "come out on top" and be better than everybody else.

8. I should do what I thought was right irrespective of what other people say.

9. I should do what they (my parents) tell me because they know best.

Kohn (1959) looked at the personality characteristics that parents thought desirable in their children. Significantly more working-class than middle-class parents valued honesty, obedience to parents, good manners, popularity with other children, neatness and cleanliness and ambition. Middle-class parents, on the other hand, valued happiness, consideration for others, being dependable, having self-control and curiosity. The following items were based directly on Kohn's work:

1. I should be honest.

2. I should be considerate towards other people.

3. I should try to be someone people can depend on.

4. I should develop self-control.

5. Children should be encouraged to ask questions about and explore their surroundings.

6. Children should discuss their school work with their parents.

Finally, a group of items were designed which looked mainly at parents' attitude towards their jobs and the jobs they wanted for their children. In this section questions were also asked about the parents' level of education as this was felt to be an important variable, particularly when combined with attitudes towards jobs (Kahl, 1953):

1. My parents encourage me to talk about all the things that interest me.

2. My parents always took it for granted that I would stay on at school.

3. My parents do not particularly like the jobs they do.

4. My parents never had the opportunity to stay on at school.

5. My parents always stressed how important it was for me to stay on at school.

6. My parents after leaving school went on to university polytechnic or college.

7. My parents would be disappointed if I did not have as good a job as they have.

8. My parents want me to have a better job than they have had.

For reasons previously outlined the format of this questionnaire was the same as that on motivation. For the last group of items the respondents were asked to say if the statements were true or not for their parents. For the other items the complete five-point Likert scale was used.

C H A P T E R S I X

Academic success

In order to test the hypothesis that academically successful students can be motivated in different ways, some measure of academic success within the school is necessary. There are a number of ways in which this could be measured: by asking teachers to rate pupils in some way, or by finding out their performance on school examinations, or on school work in general. The problem with such measures is that comparisons between pupils from different schools would be difficult. Academic success can mean different things to different teachers, and the ethos behind internal examinations can vary from one school to another. In order to be able to make comparisons between pupils, it was decided to use G.C.E. examinations for measuring academic success. This choice seemed justified by the fact that within our society such qualifications are used as indicators of academic success, for entry into further education and into jobs.

At the time of the data collection the pupils would only have had the results of their 'O' level G.C.E. examinations. Ideally one would have liked their 'A' level results as well, but the logistics of actually doing this raised problems of confidentiality, in that the pupils would have had to be individually identified. This would have been undesirable for a number of reasons. It would probably have decreased the chances of getting into schools, as most head teachers are very concerned about confidentiality. Pupils, knowing that they could be identified might not have given honest answers to the questions asked in case these were seen by members of staff.

As having actual 'A' level results was out of the question, it was decided to supplement the 'O' level results by collecting information on the number of 'A' levels being offered by the pupils, as this gives some measure of expected success. As a further indication of academic success aspirations for the future - what the pupils wanted to do when they left school - were used, again, these indicate expected success. For example, those pupils who intend to go to university or other institutions of higher education place more emphasis on academic success than those intending to leave school and go straight into jobs. It is possible therefore to differentiate pupils along some continuum of academic success based on the criteria outlined above. For example, the most academically successful pupils would be those who had at least eight 'O' levels, who were taking at least three 'A' levels and who intended to go to university.

The complete set of questionnaires, including all the measures discussed above, is given in Appendix A*. Two open-ended questions about reasons for going or not going into higher education were also included as a final check to see if any new areas came up which had not been covered.

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* Included in this set of questionnaires is a modified version of the Rotter (1966) scale to measure internal-external locus of control. Although data was collected on this variable both in the pilot study and the main study, it was not included in the final analysis of this particular piece of research.

C H A P T E R S E V E N

The pilot study: data collection and analysis

The sample

The sixth forms of two comprehensive schools were used, and the questionnaire was given to all the sixth-formers in the schools who could be present on the day of administration, a total of 79 (23 from School A and 56 from School B).

The numbers in School B were disappointing; the headmaster had said that the number would be about 80 but, due to absenteeism and pupils absent for special lessons, the number fell considerably below this. In an attempt to make up the number to 100 another school was contacted, but although the headmaster agreed to his school being used it proved impossible to negotiate a date with him. By the time it became clear that this school could not be used, it was too late to contact another, as the summer holidays were approaching. I therefore decided to go ahead with the analysis on the 79 sets of questionnaires obtained, even though their number was only just adequate for factor analysis, rather than wait for a new term to start in September.

In School B pupils handed in their questionnaires when they had finished and left the room. In School A the completion of the questionnaires was followed by a discussion of the content of the questions.

Characteristics of the sample

1. Sex (Table 2)

Sex	Boys	Girls	Question not answered
N	36 (45.6%)	42 (53.2%)	1 (1.2%)

2. Social class (Table 3)

Social class (by father's occupation)		N	Percentage	
Class I	Professional	13	16.4	
II	Intermediate occupations	32	40.5	61.9% middle-class
IIIN	Skilled occupations (non-manual)	4	5.0	
IIIM	Skilled occupations (manual)	12	15.2	
IV	Partly skilled occupations	8	10.0	30.2% working-class
V	Unskilled occupations	4	5.0	
	Don't know	6	8.0	

3. Achievement (Table 4)

This variable was scored in the following way:

Number of 'O' levels passed or being taken	Number of 'A' levels passed or being taken	Score
4 or below	-	1
5 - 7	-	2
8 or above	-	3
4 or below	1	4
5 - 7	1	5
8 or above	1	6
4 or below	2	7
5 - 7	2	8
8 or above	2	9
4 or below	3	10
5 - 7	3	11
8 or above	3	12

4. Achievement of the sample (Table 5)

Score	Number of pupils	Percentage
1	0	0
2	1	1.26
3	0	0
4	2	2.53
5	0	0
6	0	0
7	3	3.79
8	14	17.70
9	3	3.79
10	1	1.26
11	32	40.50
12	23	29.00

From the above tables it can be seen that there are certain problems with the sample in that it is biased towards girls, middle-class pupils, and academically successful pupils. As the main aim of the pilot study was to test out the validity of the items, and not to look at the interaction between the variables, it was felt that the slight bias of the sample was not too important at this stage. Nevertheless, the results of the analysis were treated with caution.

Analysis of the questionnaires

For the analysis of the questionnaires the factor analysis programme from the Statistical Package for the Social Sciences (SPSS) (Nie et al., 1975) was used. The use of factor analysis to identify the dimensions measured by questionnaires is well documented (Oppenheim, 1966; Fruchter, 1954). This statistical technique is based on intercorrelating all the items which allows the identification of "factors" made up of items that have something in common. As the factor analysis was being used for the purposes of data exploration, a principal-component analysis was used, as I did not want to make any assumptions about the underlying structure of the variables. Nie et al. (1975) explain principal-component analysis in the following way:

> "Principal-component analysis is a relatively straightforward method of transforming a given set of variables into a new set of composite variables or principal components that are orthogonal (uncorrelated) to each other. No particular assumption about the underlying structure of the variables is required. One simply asks what would be the best linear combination of variables - best in the sense that the particular combination of variables would account for more of the variance in the data as a whole than any other linear combination of variables. The first principal component, therefore, may be viewed as the single best summary of linear relationships exhibited in the data. The second component is defined as the second best linear combination of variables, under the condition that the second component is orthogonal to the first. To be orthogonal to the first component, the second one must account for the proportion of the variance not accounted for by the first one. Thus, the second component may be defined as the linear combination of variables that accounts for the most residual variance

> after the effect of the first component is removed from the data. Subsequent components are defined similarly until all the variance in the data is exhausted. Unless at least one variable is perfectly determined by the rest of the variables in the data, the principal-component solution requires as many components as there are variables".

I chose to use varimax rotation, so that the factors identified would still be orthogonal to one another.

The reliability of each dimension was calculated using the alpha coefficient, in the form suggested by McKennell (1970). A description of this coefficient, taken from McKennell, is given below:

> "Alpha is the label given by Cronbach (1951) to a particular type of coefficient which measures the reliability of a test, or item battery, in the special sense of its internal consistency. This coefficient is at the centre of modern psychometric thinking on the subject of reliability, of which only a brief and necessarily over-simplified account is given here. A test is perfectly reliable if individuals obtain exactly the same score on it on two separate occasions. The degree of reliability can, in principle, be measured by testing a sample of individuals twice and finding the correlation between the two sets of scores. This correlation (or actually its square) is then the coefficient of reliability, varying between zero and unity. This test-retest method of estimating reliability is seldom practical in the survey context since it requires a second approach to the same informants. Moreover it has theoretical difficulties. The informants may remember their previous replies giving a coefficient that is spuriously high, or if the time between is too great there may have been a genuine change in the function being measured, resulting in a coefficient

that is spuriously low. For these reasons a split-half method of estimating reliability is often used. The series of items constituting the test is divided into two halves, and treated as two tests. The correlation between the scores on the two half-tests is then found and corrected for the effects of halving. Alpha is directly related to this split-half method of estimating reliability. Several split-half coefficients can be obtained from the same testing, and these will vary somewhat, depending on which items are allocated to one or the other half-tests. It can be shown (Cronbach, 1951) that alpha is the mean of all possible split-half coefficients.

The case for knowing the reliability of measuring instruments should be self-evident. A variable measured with zero or near zero reliability would show no correlation with any other variable whatsoever. The researcher might then conclude that it was unimportant. In fact, it could be a very important variable, and the correct conclusion would be that he had failed to measure it. In general, the maximum correlation any variable can have with another is limited by the reliability with which it is measured. Two variables may be perfectly correlated in reality, but the obtained correlation will be low if the reliability of the measuring instruments is low. From a knowledge of the reliability coefficient, however, it is possible to calculate what the true correlation would be if one had a perfect measuring instrument".

McKennell's adaptation of the original formula allows the alpha co-efficient to be used in test construction with factor analysis by using data already available to the investigator - the intercorrelations between items derived from the correlation matrix necessary for the factor analysis. This formula

provides an approximation to the correct value calculated by Cronbach's method, but this approximation is very close when used with rotated factors, as the items form a relatively homogenous cluster. Although it is true that the split-half measure of reliability has advantages over the test-retest method, it does have problems of its own, particularly if one uses co-efficient alpha, a point which will be returned to later in the discussion of the main analysis.

Analysis of the motivation questionnaire

After a preliminary analysis had been completed it was obvious that there were two categories of items that had to be dropped; those items that nearly all the respondents agreed or disagreed with, and the items that did not correlate with any of the other items in the test. The later category presents no problems, as such items are clearly identified by factor analysis. The former category, however, presents slightly more of a problem: one has to decide where the line is drawn between items that have a reasonable frequency distribution in terms of discrimination and those that do not. As this was only the pilot study, it was decided not to be too stringent, as items could be eliminated from the main analysis later if they were found not to discriminate very well. I decided to cut out those items where more than 70 respondents (90% of the total) were in agreement or disagreement.

Using the two criteria outlined above, the following items were eliminated.

1. I enjoy the challenge of doing something new and difficult. — 72 said "true"

2. I like to work with people who are interesting and full of new ideas. — all said "true"

3.	If a particular topic interests me I will follow it up in my own time.	75 said "true"
4.	I feel pleased with myself if I work out the correct solution to a difficult problem.	77 said "true"
5.	I would rather have a job which pays a lot of money but is only slightly interesting than one that pays a small amount of money but is very interesting.	all said "false"
6.	When studying a subject I am really interested in, I find I work harder.	71 said "true"
7.	I enjoy discussing new ideas in my subject area with other people.	72 said "true"
8.	I would very much like to have a job which is intellectually stimulating.	72 said "true"
9.	How interesting a job is will be the most important factor in determining whether or not I would take it.	71 said "true"
10.	I didn't particularly want to stay on at school and go into the sixth form but my parents insisted that I did.	all said "false"
11.	I try to give each examination subject, whether I like it or not, equal emphasis.	did not correlate with other items
12.	I get worried if my class mates get better marks on set work than I do.	did not correlate with other items
13.	I enjoy reading about the latest scientific theories and inventions.	did not correlate with other items
14.	Whether I like a subject or not I do my best to get a good mark.	did not correlate with other items

A number of points can be made about the eliminated items.

Items 1, 6, 11 and 14 from the above list were taken from the syllabus-bound/syllabus-free questionnaire. As items 1 and 6 were items with which the majority of respondents agreed, it was rather surprising to find that they were considered discriminating items when used in another context. Items 11 and 14 above were not only uncorrelated with other items in the questionnaire but also with the other items from the syllabus-bound/syllabus-free

questionnaire, again a rather unexpected result.

The explanation for these results is not easy to find. The syllabus-bound/syllabus-free questionnaire had been used with both sixth-formers (Josephs et al., unpublished) and university students (Partlett, 1970) and had discriminated among subjects in both these areas. Why they should not do so in this case is very hard to say. It could be that the differences were caused by the different sixth-forms from which the samples came: Josephs et al. used sixth-formers from grammar schools, while the present sample were from comprehensive schools. Alternatively, it could be that some of the questions in the syllabus-bound/syllabus-free questionnaire were not as valid as the previous users of the questionnaire had indicated.

All the items concerned with interesting and stimulating jobs - items 5, 8 and 9 above - were answered in the same way by all pupils. They all considered it important that they should have an interesting job. However, items concerned with the amount of money a job would bring and the status and prestige attached to it were not areas about which all the pupils agreed. It would seem that for some the interest of the job was most important, without regard for money and status, whereas another group was concerned with both the interest of the job and the money and the status attached to it. The other items concerned with "interest", items 2 and 6 above, were also endorsed as true by the majority of pupils. It could well be concluded, therefore, that the use of the concept "interesting" prompts this kind of response; no one wants to have a boring job, although some pupils will end up with boring jobs.

One final area of interest is the complete disagreement with

item 10 above; all the respondents said "false" to this statement, yet the other two items concerned with parental pressure did not produce the same response. This was probably due to the much stronger wording of item 10 ("my parents insisted that I did") as opposed to "without pressure from my parents I wouldn't have stayed" or "I stayed on mainly because my parents wanted me to." Alternatively, it could be the first part of the sentence that caused the respondents to disagree with the item - "I didn't particularly want to stay on at school", indicating that although parental pressure had been an important factor encouraging them to stay on at school, they themselves were not strongly opposed to the idea.

After these items had been removed the remaining items formed the six main factors (rotated factor solution) given below:

Factor one

	Items	Factor loadings
8.*	I try to keep to set work and avoid following up interesting sidelines.	0.31
11.	I decided to stay on in the sixth form because that was what most of my friends were doing.	0.89
15.	I stayed on in the sixth form mainly because my parents wanted me to.	0.79
16.	I get disheartened and give up easily if something is too difficult for me.	0.29
36.	Without pressure from my parents I don't think I would have stayed on at school.	0.83
42.	I stayed on at school because I did not want to be different from my friends.	0.86

Alpha co-efficient 0.73

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* Item numbers refer to the actual questionnaire numbers given in Appendix A.

Factor two

	Items	Factor loadings
3.	Good exam results are the most important outcome of one's academic career.	0.79
6.	I would very much like to have a job which will give me high status within the community.	0.38
31.	If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	0.72
38.	I sometimes wish I was out at work earning money rather than studying.	0.51
40.	I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.	-0.35
41.	How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.	0.37

Alpha co-efficient 0.75.

Factor three

	Items	Factor loadings
10.	I prefer tasks that call for originality and initiative rather than those that are straightforward.	0.36
19.	I would rather be left to discover things for myself than have everything told to me by the teacher.	0.44
25.	I find school work restricting and would prefer more freedom of choice in the topics to be studied.	0.79
29.	I would rather pursue my own ideas than follow a syllabus.	0.83

Alpha co-efficient 0.72.

Factor five

	Items	Factor loadings
8.	I try to keep to set work and avoid following up interesting sidelines.	0.37
17.	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	-0.33
20.	I usually study only when I am required to, in order to pass exams.	0.79
30.	Without the stimulus of exams I doubt whether I would do much studying.	0.85
31.	If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	0.32

Alpha co-efficient 0.73.

Factor six

	Items	Factor loadings
1.	I play any game to win, not just for the fun of it.	0.76
6.	I would very much like to have a job which will give me high status within the community.	0.54
13.	I enjoy feeling that I can do things better than anybody else.	0.38
32.	How much prestige a job had would be the most important factor in determining whether or not I would take it.	0.79
26.	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	0.27
47.	Sex (male).	0.40

Alpha co-efficient 0.65.

Factor eleven

	Items	Factor loadings
17.	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	0.53.
19.	I would rather be left to discover things for myself than have everything told to me by the teacher.	0.55
34.	I enjoy being part of an enthusiastic group of people working on a project.	0.76
39.	I enjoy visiting museums, art galleries and exhibitions.	0.60
40.	I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.	0.36
46.	I enjoy reading plays, novels and poetry.	0.31

Alpha co-efficient 0.70.

The correlation matrices for each of these factors are given in Appendix B.

The first point to be made about this factor solution is that the groups of items that form each factor are those which were designed to measure either intrinsic or extrinsic motivation; there is no overlap between these areas. The problem, however, is that there are several factors for each area which appear not to be completely independent of each other, as there are items which are common to more than one factor. The next step therefore is to see if it is possible to achieve greater data reduction by combining together some of the factors which have items in common. The items making up the six factors given above were plotted against the first two unrotated factors, using their loading on these factors (Appendix B, Figure 1.) From this figure it can be seen that the items form three main

groups as opposed to the six sub-groups of the rotated factor solution.

These three larger groups of items do make theoretical sense. There is one bi-polar factor (Factor one) with items measuring intrinsic motivation at one end (Group One) and items which represent the opposite of intrinsic motivation at the other: a desire for clearly defined tasks and a reluctance to work unless under pressure from some external source - parents, friends or examinations (Group Three). Orthogonal to this factor is factor Two which is concerned with the external benefits of an education: high-status jobs, money and recognition of achievement combined, perhaps not surprisingly, with a competitive drive (Group Two). There is one problem with this second non-rotated factor: it appears to contain items designed to measure intrinsic motivation which should, at face validity, have been in the same group as factor eleven in the rotated factor solution. Inspection of the graphical print-out of the rotated factor solution revealed that these items (which form factor three in the rotated factor solution) are orthogonal to both factor eleven and the factors which combined to form the non-rotated factor two. Factor three is made up of items about the school syllabus which, from the analysis, appear to be unconnected with motivation. As the main purpose of the questionnaire is to look at motivation these items were removed. These three groups of items discussed above have combined the rotated factors in the following way; group one is mainly factor eleven, group two is factor two and factor six, group three is factor one and factor five.

The correlation matrices for the items in each of these three groups are given in Appendix B, and the alpha co-efficients for each group are: Group One 0.76; Group Two 0.70; and Group Three 0.81. If the items in Groups One and Three form a bi-polar factor, then it might be sensible to see them as one group of items measuring intrinsic motivation: intrinsically motivated pupils would agree with the items in Group One and disagree with those Group Three, and the extent to which they did this would be a measure of the strength of their intrinsic motivation. When the items were combined to form one scale, the alpha co-efficient was 0.86.

Having explored the data in various ways, one is now left with the following question: is the rotated factor solution with its six main factors the best interpretation of the data, or does reducing the data to two main factors give a better interpretation? As was said earlier, the number of pupils used was just sufficient for factor analysis, so it would not really be advisable to make a firm decision on this matter at this point. It would seem, however, that the rotated factor solution is making very fine distinctions between groups of items and perhaps dividing them into unnecessarily small units, and that the larger groupings are more practicable. When the factors are combined there is no loss of reliability and in some cases the alpha co-efficients are higher for the combined groups. Using the broader groupings also allows one to include items which had not appeared on the main factors in the rotated factor solution; this is particularly true in the case of Group One. Another advantage of the broader groupings is that each item appears in only one group. The disadvantage of the broader

grouping is that it is possible that factors which are really independent are being combined, thus distorting the data. It was decided to leave the final decision about which of the solutions is the better until the principal-component analysis had been repeated on the main sample; at this stage, however, the author feels that the broader groupings are the more desirable, because of the advantages outlined above.

Although an interpretation of the findings is of necessity very speculative at this stage, some interesting facts have emerged from this analysis, particularly with regard to the items designed to measure extrinsic motivation. From the analysis it could be concluded that the extrinsic rewards of an education (good jobs, money, etc.) are valued irrespective of whether the pupil is intrinsically motivated within the school situation. Because the two factors are orthogonal, pupils can be both highly intrinsically motivated within the school and at the same time value the extrinsic rewards their education could give them. Extrinsic rewards can also be valued by pupils who are not at all intrinsically motivated within the school but who are extremely task-orientated and only work because of external pressure. The items to measure extrinsic motivation, therefore, form two distinct groups which are independent of one another. One group of items appear to be the opposite of intrinsic motivation: they correlate negatively with items designed to measure intrinsic motivation, and do not correlate at all with the other items designed to measure extrinsic motivation. A second group of items appears to be measuring the extent to which pupils accept and value the capitalist ethic of having money, status and recognition, and doing well in a competitive situation.

On the basis of the analysis of the pilot project it would seem that pupils can be either intrinsically or extrinsically motivated at school and that this motivation is independent of the value they ascribe to rewards gained by that education outside school. Such conclusions, however, can only be regarded as valid if they are confirmed by the main analysis.

On the basis of the analysis described above the questionnaire to measure motivation in the main study was designed. It contained the items from the three main groups, with some minor modifications. A certain amount of redundancy was removed by taking out some items. In Group Three one of the items relating to parents was taken out because, as the two items correlated 0.73, only one of them was felt to be necessary; similarly, the two items concerned with friends correlated 0.65, so only one of them was used. In Group One two items concerned with the amount of reading a pupil would do correlated 0.66, so again only one of them was used.

The final version of the questionnaire for the main study is given in Appendix C.

Analysis of the social-class questionnaire

A large number of items had to be eliminated from the three questionnaires to measure social class because the majority of pupils indicated that their parents were in agreement over the statements in those particular items. As there were five categories of response, the ideal distribution would be 20% of the answers in each category on each item. If we combine the first two categories (strongly agree and agree) and the last two categories (strongly disagree and disagree), then ideally 40% of the responses should fall into

85

either of those two categories. It was decided to eliminate all items which had more than twice that response rate, i.e. 80% of the responses fell into the first two or the last two categories. In addition, items were eliminated if almost 80% of the responses fell into the first two or last two categories and the majority of the remaining responses were in category three ("I have no feelings either way" or "of some importance"). Using these criteria, the following items were eliminated:

From the first section of the social-class questionnaires (Appendix A, page 11):

Item		More than 80% of the responses in the first two categories
2.	I should have a job I personally find interesting.	81%
6.	I should be happy in the job I do.	83%
7.	I should be honest.	87%
8.	I should be considerate towards other people.	86%
9.	I should try to be someone people can depend on.	81%

Item		Almost 80% in the first two categories and the majority of the remaining responses in the neutral category
1.	I should have a job that gives me the security of a steady income.	69%
4.	I should make up my own mind about things.	77%
12.	I should develop self-control.	74%

From the second section of the social-class questionnaire (Appendix A, pages 14 - 15).

Item		Over 80% of the responses in the first two categories
6.	Children should be given every encouragement to stay on at school.	82%
7.	Staying at school is a waste of time.	(-) 100%
9.	As long as people do their best, it does not matter if they do not do as well as other people.	86%
10.	Children should be encouraged to ask questions about and explore their surroundings.	83%

Item		Almost 80% in the first two categories and the majority of the remaining responses in the neutral category
2.	While still at school I should try to make detailed plans about my career.	75%
3.	Life is so short that having a good time is more important than anything else.	(-) 72%
8.	Children should discuss their school work with their parents.	78%

The following items, which had a reasonable distribution of responses, therefore remained:

From the first section:

Item		% of parents whose responses were in the first two categories
3.	I should not argue with adults.	31%
5.	I should try to "come out on top" and be better than everybody else.	40%
10.	I should do what I thought was right irrespective of what other people say.	48%
11.	I should do what they (my parents) tell me because they know best.	50%

From the second section:

	Item	% of parents in first two categories
1.	A good education is the only way of improving your standard of living.	32%
4.	You can achieve anything you want provided you work hard enough.	67%
5.	People in authority make rules for good reasons and therefore they should be obeyed and not questioned.	54%
11.	People who do not take advantage of the opportunity to stay on at school are foolish.	46%

All the items in the third section of the questionnaire (Appendix A, page 16) had a reasonable split of scores between true and false, so none of these items were eliminated at this stage.

On the basis of the previous studies on social-class values it is surprising that such a high level of agreement was shown between parents of different classes.

One possible explanation for the discrepancy between the present findings and other studies is that working-class parents with children in the sixth form have attitudes more like those of middle-class parents who have children in the sixth form than those of working-class parents who do not. The items on which there is a wider spread of responses consequently become all the more interesting because they seem to represent the area of difference between working-class and middle-class parents who have children in the sixth form.

The eight items from Sections One and Two and all the items from Section Three of the questionnaire were then combined for the principle-component analysis. This analysis produced one main bi-polar factor as can be seen from the plot of items against the

first two non-rotated factors (Appendix B, Figure 9). However not all the items correlated well with each other (see Figure 10, Appendix B). One cluster of items can be clearly identified (items 13, 15, 20, 21, 27, 28 and 34); these items appear to be a measure of authoritarianism, in that hard work and doing better than others are valued along with deference to the authority of parents and adherence to rules (Adorno et al. 1950).

According to Kohn (1959) this dimension would be more likely to represent working-class than middle-class parents. Items 27 and 28 do correlate with being working-class, measured by father's occupation, but they do not correlate very highly (0.18 and 0.16 respectively); the other items do not correlate with social class at all.

There are two possible explanations for this. The descriptions of parents' occupations given by the pupils were in some cases not very detailed and it was difficult to classify some of the occupations accurately. So the lack of relationship could have been because the classification of occupations was not always as accurate as it ideally should have been. The wording of the question was felt to be at fault here and was modified for the main data collection. Alternatively, it could be that for this sample of parents authoritarianism is independent of social class and should be regarded as a separate dimension. Whether or not this is the case is difficult to decide with a small sample, so no firm conclusion can be drawn at this stage. One item in this cluster did not seem to make theoretical sense with the others; it was item 20: "I should do what I thought was right irrespective of what other people say." The item was actually designed to illustrate the opposite of the authoritarian personality: it

was meant to represent an internalized standard of values rather than deference to external, imposed ones, which is why it contained the phrase "irrespective of what other people say". However, the first part of the phrase, with its reference to "doing what is right", appears to be the part responded to by this sample; concern for doing the "right thing" is part of the authoritarian personality. Despite the fact that this item might be ambiguous, it was decided to include it in the final questionnaire as it did correlate with the other items in the cluster, and to remove it after the analysis of the main sample if necessary.

The other items in the analysis form a fairly coherent cluster, but again not all the correlations are high, this could be due to the problem of classifying fathers' occupation accurately. However, some of the items do correlate quite highly with fathers' occupation. As would be expected, not having the opportunity to stay on at school is quite highly correlated with being working-class (0.41). Conversely, going on to higher education after leaving school is negatively correlated with being working-class (-0.33). Parents not particularly liking their jobs, and wanting their children to have better jobs than they had, are both correlated with being working-class, the correlation being 0.29 in each case. Parents not having the opportunity to stay on at school is reasonably well correlated (0.20) with a desire for their children to have better jobs than they had themselves. The only item from the authoritarian cluster which correlates with social class is item 24: "people in authority make rules for good reasons, therefore they should be obeyed and not questioned", the correlation being 0.24.

The results of this analysis are difficult to interpret. If we take social class, as measured by father's occupation (item 9), as a pivot, then items 3, 4, 6 and 8 are related to it, although they are not all necessarily related to one another. The items in the authoritarian cluster are very tentatively linked with social class via one item - item 24. If all the items in the analysis are combined to form one scale, the alpha-coefficient is 0.69, which does seem to indicate a reliable measure. But whether or not it is legitimate to combine all these items into one scale seems to be in doubt, given the low correlations between the items in the authoritarian cluster and the others. The analysis of the main sample should allow the resolution of this problem by providing more information on which to decide whether there should be one scale or two. All the above items were therefore included in the questionnaire for the main study.

As stated earlier, the descriptions of fathers' occupations given by the pupils were not very accurate, so the format of the question was altered to request more specific information; it asked the pupils to state which industry their parents worked in, the job they did within that industry and the level of responsibility they had. It was also decided to ask the pupils which social class they thought their parents belonged to, to see if their perception of social class was related to the job descriptions and their parents' attitudes. The final version of this questionnaire is given in Appendix C.

S E C T I O N 3

The main study

C H A P T E R E I G H T

Sampling procedures and data collection

Sampling procedure

In an early discussion (Chapter 4) the reasons for excluding type of school from the variables being studied were out-lined; the main aim therefore in the selection of the sample was to "control" for type of school, as much as this is possible, by ensuring uniformity in certain areas. The reason for choosing only schools with certain characteristics is that the pupils attending them will, to some extent, have experienced a similar environment. Obviously this attempt at uniformity is far from complete as no attempt has been made to control for that elusive quality, the ethos of the school. A number of criteria were used to select the schools for the sample. Each one of these is listed below with reasons for the choice where this was other than for uniformity.

Comprehensive schools

The reasons for choosing comprehensive schools were also discussed earlier (Chapter 4). To ensure that the schools were true comprehensive schools and not contaminated by a selection system, only those Local Education Authorities in England and Wales* that sent the majority of 13-year-olds to comprehensive schools were used; as it is virtually impossible to find an LEA that does not have at least one direct-grant school (see Table 6) the "majority" was defined as over 90%. Most of the LEAs used, however, had a much higher percentage than that.

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* Scotland was excluded because it has a different system of secondary education.

The bias of 11+ results in favour of middle-class children has been well documented (Swift, 1965). It was therefore essential to use sixth-formers who had not been through a selection process either by the 11+ or by any similar examination. In order to ensure that this was the case, only those schools that became comprehensive before and during 1967 were used.

The following LEAs fulfilled the two criteria outlined above. The sample is based on LEAs that were in existence before the recent government re-organization; it was necessary to use these as no information was available at the time on the new LEAs. The information given in Table 6 is taken from Benn (1972).

Table 6

LEA	% of thirteen-year-olds in comprehensive education	LEA	% of thirteen-year-olds in comprehensive education
Anglesey	100%	Isle of Man	100%
Blackburn	100% - except for 3 direct-grant schools	Leicester-shire	100% - except for 2 direct-grant schools
Bradford	96% - except for 4 direct-grant schools	Luton	100%
Breconshire	100%	Merioneth	100%
Brent	90%	Merthyr Tydfil	100%
Caernarvon-shire	100%	Montgomery-shire	100%
Cumberland	92.6%	Newport	100%
Enfield	94%	Oldham	100% - except for 2 direct-grant schools
Flint	100%	Oxfordshire	95%
Haringey	92.1%	Preston	100% - except for 3 direct-grant schools
Huntingdon	100% - except for 1 direct-grant school	Rotherham	100%
Swansea	100%	Southampton	96%
West Bromwich	100%	Wakefield*	90%

* Wakefield was later excluded because pupils entered schools by a system of "guided parental choice". That is, "parents were advised on the different academic types of school and helped by teachers to make the choice most suitable for their child" (Benn, 1972). Although Wakefield LEA described themselves as having "gone comprehensive", it was felt by the author that the system described above was still a selection system. The other LEAs assigned pupils to schools on the basis of catchment areas, feeder schools or parental choice, or any combination of these three.

Three further criteria were used to select schools within these LEAs.

Sex. The schools used were of mixed sex, for two reasons: firstly to ensure uniformity, and secondly to allow the investigation of the effects of sex differences on the other variables.

Religion. Schools of explicitly stated religious denomination were also excluded, in the interests of uniformity between schools.

Size. The size of the school was controlled, not only for the sake of uniformity, but also to ensure that the school had a viable sixth form. The D.E.S. (circular 10/65) said that in order for a comprehensive school to have a viable sixth form it should have a minimum entry of five forms (150 pupils per year). This minimum entry level has been widely criticized (for example in Pedley, 1963) as it was felt to be too low, particularly in areas that had little or no tradition of staying at school (Burgess, 1973). A six-to-seven form entry has been proposed as being more like the figure needed for a viable sixth form (Pedley, 1963). In terms of pupil numbers, this would mean comprehensive schools of no less than 1,200 pupils. If Burgess's (1973) figures are correct, this would mean sixth forms of not less than 120 pupils as 10% of the school population should go into the sixth form. Thus only schools with 1,200 pupils or more were included in the sample.

Sixth-form colleges. All sixth-form colleges were excluded from the sample. Going to a smaller comprehensive school and then to

a sixth-form college, is a different experience from going to a large comprehensive from 11 (or 13) to 18 years old.

To summarize, then, the schools included in the sample had the following characteristics:

1. A comprehensive school in an area where there is no selection system and where over 90% of 13-year-olds go to comprehensive schools.
2. Has been comprehensive since before 1967.
3. Of mixed sex.
4. Of no particular religious denomination.
5. Over 1,200 pupils.
6. Have the full intake of pupils from 11 (or 13) years to 18 years.

In all thirty five schools fulfilled all the criteria.

It was decided to aim for a moderately large sample of sixth-formers (approximately 1,000), particularly as sex differences might result in separate analyses for males and females. All of the schools above should have 120 or more pupils in the sixth form, and the aim was to give the questionnaire to all the pupils in the sixth forms of the schools chosen. Based on the experience of the pilot study, it seemed unlikely that this aim would be completely fulfilled, as there would be pupils who for some reason could not fill in the questionnaire (absenteeism, special options that could not be missed, or simply because they chose not to). In order to achieve the figure of 1,000 it was decided to select randomly twelve schools from the thirty-five who qualified, which would allow for a loss of 20 to 30 pupils from each sixth form. One school refused to take part in the study, while the head of another school agreed on condition that all the parents of pupils in the sixth form were

shown a copy of the questionnaire for their approval. The author suggested that a letter might be sent to the parents explaining the project; the head however felt that this was not sufficient and insisted that they should be shown the questionnaire. It was therefore decided not to use this school, as the author would have no way of knowing how much pupils would discuss filling in the questionnaire with their parents, or among themselves, and how this would affect the results. As great care had been taken to standardize the procedure for data collection, it was felt that it was not worth losing this standardization for the sake of one school.

The remaining ten schools agreed to take part. The schools were fairly well distributed in England and Wales: two were in the Greater London area, two in the north of England (Cumberland and Lancashire), one in Wales, one in the Midlands (Leicestershire), two in Oxfordshire and one in Cambridgeshire. The data was collected by the author in March and April of 1975. The pupils were told the purpose of the research and each section of the questionnaire was explained separately (see Appendix D). After completing the questionnaires the pupils handed them in to the author and left the room. The number of pupils who filled in the questionnaires in each school are given below.

Table 7

School	Number of pupils
A	40
B	89
C	53
D	98
E	56
F	96
G	38
H	88
I	83
J	66
Total	707

The total number of respondents was disappointing, as the aim had been for 1,000 pupils. The main reason for the numbers being smaller than anticipated was because a number of the schools had many fewer than 10% of the total intake in the sixth form; this was particularly true of the schools in predominantly working-class areas, of which there were three, where there was little tradition of staying on in the sixth form. However, in all the schools except school A, the majority of the sixth form did fill in the questionnaires although as anticipated there was a small loss due to absenteeism for legitimate reasons. On the whole the response was pleasing, but school A was, as already stated, something of an exception. Despite the request for as many as

possible of the sixth form, this particular school allowed only those pupils who had a free period at a particular time to take part; consequently only 40 out of a sixth form of over 200 filled in the questionnaires. At this stage it was possible to go back to the original stratified sample and randomly select more schools in order to reach the required numbers. However, by the time the schools had been selected and contacted, the pupils would have been starting their 'A' level or school examinations. The author felt that it would be unfair to ask pupils to participate in a piece of research while involved in their examinations. After examinations have finished many schools do not insist on attendance from the sixth form, and even where they do insist, absenteeism is often high; thus there would be no guarantee that one would have sufficient numbers of sixth-formers even in two or three schools to make up the sample size to 1,000 - and there would be a strong likelihood that those in school would be a biased sample. The next opportunity to collect data would have been October or November, which would have meant a gap of seven to eight months between the two data collections; this gap was felt to be too large, as circumstances might have changed during that time in such a way as to affect the results. It was therefore decided to do the analysis with the sample already collected.

Characteristics of the sample

Table 8 Sex

	N	%
Boys	347	50.22
Girls	344	49.78
Total	691*	100

* See footnote overleaf

Table 9 Fathers' occupation

		N	%
I	Professional	82	11.9
II	Intermediate occupations	204	29.5
IIIN	Skilled non-manual	85	12.3
IIIM	Skilled manual	201	29.1
IV	Semi-skilled	45	6.5
V	Unskilled	17	2.5
	Deceased	5	0.7
	Pensioner, retired or unemployed	8	1.2
	No reply	44	6.4
	Total	691	100

Table 10 Social class

	N	%
Middle-class	371	53.7
Working-class	263	38.1
Other categories	57	8.2
Total	691	100

* Sixteen sets of questionnaires had to be rejected because they were not filled in correctly - usually because the respondent had not filled in one section.

The distribution of boys and girls in the sample was extremely good for the needs of the analysis, there being only three more boys than girls. The distribution of social class, measured by fathers' occupation, was not quite so good, but a bias of fifteen per cent in favour of the middle class is not too large a bias, particularly when compared with the figures for secondary schools in general; according to the D.E.S. (1976), sixth-formers in their final year are 72% middle-class and only 26% working-class. The use of comprehensive schools to ensure a higher working-class population seems therefore to have been justified. It is interesting to note the change from the Schools Council (1970) survey, where the proportion of working-class children in the sixth forms of comprehensive schools was higher than that of middle-class children (51% as opposed to 43%). This is presumably because of the increase in the number of comprehensive schools and the corresponding decrease in the number of middle-class dominated grammar schools. The difference in figures could also mean that the rate of staying on in the sixth form among working-class pupils had deteriorated over the five-year period from 1970 to 1975. There is some slight suggestion that this might be the case if the figures from the D.E.S. survey are compared with those from the earlier Schools Council Survey, whose figures for sixth-formers in all schools are 65% middle-class and 30% working-class as opposed to the 72%/26% division of the later survey. However, this small difference could be due to the fact that the D.E.S. was using only final year sixth-formers, and there could be a slightly higher drop-out rate for working-class pupils at the end of the first year sixth.

It is interesting to compare the social-class division based on the Registrar General's classification with that given by the pupils themselves, who were asked to say what social class they thought their parents belonged to. Results from this question are given below.

Table 11 Pupils' perception of their parents social class

	N	%
Middle-class	235	34.0
Working-class	265	38.4
No particular class and don't know	124	18.0
No reply	67	9.6
Total	691	100

Because of the fairly large percentage of students in the last two categories in Table 11, these figures need to be treated with caution, but it is perhaps significant that more of the pupils see their parents as working-class than middle-class. This could be just inverted snobbery, but on the other hand it could be illustrating one of the main problems in using fathers' occupation as a measure of social class - that of intra-generational mobility. Many of the parents of these sixth-formers could originally have been defined as working-class by occupation, but because of promotion they might now have middle-class occupations. The crucial questions are whether their attitudes and values are those regarded as typical of the working or the middle-classes,

and how these attitudes affect their children, a point that will be investigated later.

A large percentage of these sixth-formers (73.3%) had working mothers. There is no significant sex difference on the variable of social class as measured by fathers' occupation; 55.1% of girls' fathers and 52.3% of boys' fathers are middle-class, 36.9% of girls' fathers and 39.3% of boys' fathers are working-class.

Table 12 Achievement of pupils measured by 'O' and 'A' levels gained or being taken

Score	Number of 'O' and 'A' levels	N	%
1	4 'O' levels or less	78	11.3
2	5-7 'O' levels only	56	8.1
3	8 or more 'O' levels only	8	1.2
4	4 'O' levels and 1 'A' level	20	2.9
5	5-7 'O' levels and 1 'A' level	30	4.3
6	8 or more 'O' levels and 1 'A' level	10	1.4
7	4 'O' levels and 2 'A' levels	26	3.8
8	5-7 'O' levels and 2 'A' levels	95	13.8
9	8 or more 'O' levels and 2 'A' levels	17	2.5
10	4 'O' levels and 3 'A' levels	22	3.2
11	5-7 'O' levels and 3 'A' levels	153	22.2
12	8 or more 'O' levels and 3 or more 'A' levels*	174	25.2
	No information given	2	0.2
Total		691	100

* It was decided not to count more than 8 'O' levels and more than 3 'A' levels as separate categories because the maximum number of 'O' levels pupils took was often decided by school policy and not pupil choice, many schools setting eight 'O' levels as a maximum. The pupils who were taking four 'A' levels were nearly all doing General Studies as their fourth subject, which again was usually determined by school policy.

Table 12 has been further reduced, as given below for greater clarity.

Table 13 Achievement

	N	%
'0' levels only	142	20.6
Taking 1 'A' level	60	8.7
Taking 2 'A' levels	138	20.0
Taking 3 'A' levels	349	50.6
No information given	2	0.2
Total	691	100

This sample therefore has a fairly wide distribution of achievement, from those pupils who have or are taking 4 or less 'O' levels to pupils with 8 or more 'O' levels and taking 3 or more 'A' levels. There is no sex differences in achievement ($F = 0.2235$), the mean achievement score for boys being 8.19 and for girls 8.04.

The sixth-formers were asked to say what they planned to do after leaving school. The following two tables give their aspirations for the future.

Table 14 Aspirations, based on answers to B9

	N	%
1. University	209	30.2
2. Polytechnic	55	8.0
3. College of education	141	20.4
4. Art, music or drama college	18	2.6
5. Straight into full-time employment (see Table 16)	141	20.4
6. Don't know	111	2.3
7. No response	16	16.1
Total	691	100

Table 15 Aspirations, based on answers to B12

	N	% of total population (i.e. 691)
Nursing	12	1.7
Armed forces	9	1.3
V.S.O.	1	0.1
Agricultural college	3	0.3
Accountancy	1	0.1
Secretarial college	4	0.6
Technical college	1	0.1
Total	31	4.2

60.7% of the pupils who planned to go into full-time employment also planned some form of further training, as given in Table 16.

Table 16 Further training, based on answers to B11

	N	% of total population (i.e. 691)
Apprenticeships	26	3.8
Day release	48	6.9
Night school	13	3.3
Total	87	14

It is obvious from these figures that, of those pupils who filled in B12 (N = 31), some had already given a response to B9, as only sixteen pupils had given no response to that question. To avoid counting some pupils twice, the two sets of figures were reconciled in the following way. If pupils had answered B9, then any other information given in B12 was ignored. This removed all pupils in Table 15 who were going into the armed forces, the one pupil doing voluntary service overseas, and the pupil who was training for accountancy.

Those pupils who answered only question B12 were reclassified in the following way. Pupils who said they wanted to go to technical or agricultural college were included with pupils bound for colleges of education, on the grounds that all these institutions provide full-time training which is specifically job-orientated. Pupils who were going to train as nurses or go

to secretarial college were included with those going into full-time employment, as this kind of training is either on-the-job training or a very short full-time course aimed at specific job training.

The five groups constituted by this reclassification are given below, both in total and broken down by sex.

Table 17 Aspiration, broken down by sex

	Boys		Girls		Total	
	N	%	N	%	N	%
University	115	33.15	94	27.34	209	30.25
Polytechnic	26	7.49	29	8.40	55	7.96
Art, music or drama college	9	2.60	9	2.60	18	2.61
College of education	42	12.10	101	29.38	143	20.69
Full-time employment	95	27.37	60	17.45	155	22.43
Don't know	60	17.29	51	14.83	111	16.06
Total	347	100	344	100	691	100

There was a significant difference between boys and girls on aspiration; in terms of going into higher education, girls have, overall, higher aspirations than boys ($F = 13.21$, $p < 0.01$). This difference is however determined almost exclusively by the much larger number of girls going to a college of education - 101 as opposed to 42 boys. As regards other institutions of higher education the numbers are fairly even, although there are

slightly more boys than girls opting for university. It is, however, doubtful whether it is legitimate to regard aspirations in a linear fashion. It might be reasonable to conclude that pupils opting for degree courses have higher aspirations than those who do not, but it is difficult to see why going to a college of education is a higher aspiration than some form of apprenticeship for a skilled trade, as both represent training for a specific job. If we divide aspirations into two groups, those going on to degree courses and those who are not, then the difference between boys and girls is greatly reduced, as can be seen from the table below.

Table 18 Degree courses by sex

	Boys		Girls	
	N	% of total population of boys	N	% of total population of girls
Degree courses	141	40.63	123	35.75
Others (excl. don't knows)	144	41.49	161	46.80
Total	285	82.12	284	82.55

In summary, it would seem reasonable to conclude that the aspirations of boys and girls are different, particularly with regard to colleges of education and full-time employment, but not to make the assumption that these differences reflect higher aspirations on the part of one sex or the other.

There are slight differences between this sample and the sample used for the pilot study, which should be borne in mind during the replication of the factor analyses. The bias of the pilot study sample towards girls has now been eliminated. The main sample is, as the pilot sample was, biased towards the middle class and towards high achievement in the pupils. However, both these biases are smaller in the main sample, as can be seen from Tables 19 and 20.

Table 19 Social class

	Pilot sample %	Main sample %
Middle-class	61.9	53.7
Working-class	30.2	38.1

Table 20 Achievement

	Pilot sample %	Main sample %
Taking 1 'A' level or less	3.79	29.3
Taking 2 'A' levels or more	96.04	70.6

As regards aspirations, there were also differences between the two samples. The information collected for the pilot study was not as detailed as that collected for the main study, as the pupils were only asked to distinguish between going into

higher education (university, polytechnic or college of education) and full-time employment. The appropriate comparisons are given below.

Table 21 Aspirations

	Pilot study %	Main study %
Further education (university, polytechnic college of education)	81.02	61.51
Full-time employment	10.12	22.43
Don't know	8.86	16.06
Total	100	100

The main sample therefore is more heterogeneous than the pilot sample.

C H A P T E R N I N E

Analysis of the motivation questionnaire

Before beginning the analysis it was necessary to make decisions about scoring the questionnaire, particularly with regard to missing values and the "don't know" category. In the analysis of the pilot study, "don't know" had been treated as "false"; the analysis therefore was based solely on the "true" responses. It was felt, however, that this was perhaps not the best way to deal with the "don't knows", as it is not the same response as "false". For the analysis of the main sample, "don't know" was treated as a middle category between "true" and "false" and scored accordingly; thus subjects scored 2 for "true", 1 for "don't know" and 0 for "false". The analysis therefore was based on both the "true" and "don't know" categories. The sample, using the motivation questionnaire, was then checked for "chronic don't knowers", of which there were very few; only 10 subjects out of the 691 said "don't know" to more than a third of the items, the average number of "don't knows" per subject being 1.66. One problem with subjects who have a tendency to give the "don't know" response is that they may differ systematically from the rest of the sample and therefore distort the results. It seemed desirable therefore to check the "don't know" score of each subject against other variables to see if this was the case. In this particular study it was rather difficult to do, as most of the variables were attitudinal ones which would obviously be influenced by the subject's "don't know" responses. One variable, however, that did not come into this category was the achievement variable, which was based on 'O' and 'A' levels, so the "don't know" scores of subjects were checked against their achievement

score. No relationship was found between these two variables, which is perhaps not surprising, given the low rate of "don't know" responses. It was decided therefore not to remove the "chronic don't knowers" from the sample, mainly because they were so small in number but also because they did not differ from the rest of the sample on the variable tested.

There are three main ways of dealing with the problem of missing values. The first and probably the most drastic is to remove all cases that have a missing value. This, however, is not really very practicable, as the sample would most probably be greatly reduced. For example, on the motivation questionnaire there were eighty-six missing responses; if these were removed it would mean the loss of up to eighty-six subjects from the sample.

The second alternative is to use a pair-wise deletion technique. By this method the missing item and the item it is being correlated with are both removed from the analysis for that correlation. The drawback with this method is that the correlations within the matrix are then all based on different populations.

Finally, one can deal with the problem of missing values by assigning a score of 0 to that particular response. By this method the population remains constant, but the correlation between the items may be slightly lowered because of the slightly lowered mean. This method however, was felt to present the least of all the problems in dealing with missing values, and it was the course adopted. Missing values were thus treated the same as a "false" response for the purpose of the analysis.

The motivation questionnaire was then factor-analysed using the same procedure as for the pilot study; however, the factor structure produced by this analysis was not very clear and the

correlations were low, leading to low alpha-coefficients. This was rather surprising, given the results of the pilot study, where the factor structure was clear. The divergence might have been caused by the differences in the characteristics of the two samples. The pilot study sample, unlike the main sample, was biased towards high-achieving girls who planned to go to university. It could be that this particular sub-group, whose pattern of responding would have been dominant in the pilot study, is not representative of the sixth form as a whole. I decided to divide the sample into sub-groups and see if the correlation matrices were significantly different.

The sample was therefore divided initially into boys and girls, and the factor analysis was repeated on the two sub-groups. A test for the equality of matrices (Kullback, 1968) was carried out.

Kullback's test for equality of correlation matrices is based on Box's M test of variance/co-variance (Cooley and Lohnes, 1971) and measures the dispersion of the correlation matrix. When using this method a table is produced giving the dispersion matrix determinants, which are based on the correlation matrix determinants and the variance product; the variance product for any group is the value obtained by multiplying together the variances of all the variables. The smaller the correlation, the more correlated overall are the variables for that group; the larger the variance product the larger, overall, is the variance for the group. As with Box's M, for large degrees of freedom a χ^2 test is used. This showed that the matrices for boys and girls were significantly different - $\chi^2 = 404.285$ ($p < 0.01$).

Wilks' Lambda, used to test for the difference among the

complete set of means for each group, also showed that the groups were significantly different $F = 9.698$ ($p < 0.01$)*.

The difference between the two groups was further explored by use of analysis of variance between groups on each individual item in the motivation questionnaire. Out of the 26 items only eight show no significant difference between boys and girls. Of the remaining items, four are significantly different at the 5% level, three at the 1% and eleven at the 0.1% level.

Boys score significantly higher than girls ($p < 0.01$) on the following items:

1. I play any game to win, not just for the fun of it.

8. I enjoy feeling that I can do things better than anybody else.

12. I usually study only when I am required to, in order to pass examinations.

17. If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.

19. I enjoy working out the solution to a complicated problem.

26. How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.

Girls score significantly higher than boys ($p < 0.01$) on the following items:

10. I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.

11. I would rather be left to discover things for myself than have everything told to me by the teacher.

15. I like to read a lot of books covering widely differing subjects.

21. I read a lot outside my school subjects.

24. I enjoy visiting museums, art galleries and exhibitions.

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* The author is indebted to Dr Peter Coxhead both for drawing attention to these techniques and for allowing the use of his computer programme for the analysis.

These items taken as two groups seem to indicate quite clearly that boys and girls differ with regard to type of motivation, boys scoring significantly higher on items concerned with extrinsic motivation and girls on items concerned with intrinsic motivation. This point will be returned to later. As the differences between boys and girls were so large on the motivation questionnaire it was decided that all future analysis should be done separately for boys and girls.

Factor-analysing the sexes separately improved the situation in that the correlations were higher and the factor structure more coherent, but the results were still very poor in comparison with pilot study. To see if differences in aspiration, as well as sex differences were important, the sample was divided into further sub-groups in the following way:

Table 22 *Sub-groups based on aspiration and sex

Boys going to university and poly-technic N = 141	Boys going to college of education, art, music or drama college N = 42	Boys going into full-time employ-ment N = 91	Boys "don't know" N = 60
Girls going to university and poly-technic N = 123	Girls going to college of education, art, music or drama college N = 108	Girls going into full-time employ-ment N = 60	Girls "don't know" N = 51

* These figures do not include those who had not filled in question B9, who were incorporated later.

The test for equality of matrices showed that the separate matrices for the different groups of girls, including the "don't knows", were significantly different: Kullman's $\chi^2 = 1038$ ($p < 0.001$). Wilks' Lambda indicated that the group means were also significantly different $F = 1.672$ ($p < 0.01$). Similar results were obtained for the different groups of boys, both for the correlation matrices ($\chi^2 = 1021$, $p < 0.001$) and Wilks' Lambda ($F = 1.854$, $p < 0.001$). Analysis of variance identified the items on which the groups differed most significantly ("don't knows" were excluded from this analysis).

Boys who were going into higher education scored significantly higher than boys going into full-time employment on the following items:

4. I spend too long on certain topics because I get very interested and involved in them ($p < 0.5$).

10. I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth ($p < 0.01$).

19. I enjoy working out the solution to a complicated problem ($p < 0.01$).

25. I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished ($p < 0.01$).

Boys who were going straight into full-time employment scored significantly higher on the following items:

6. I try to keep to set work and avoid following up interesting sidelines ($p < 0.1$).

9. I get disheartened and give up easily if something is too difficult for me ($p < 0.5$).

12. I usually study only when I am required to, in order to pass exams ($p < 0.01$).

16. Without the stimulus of exams I doubt whether I would do much studying ($p < 0.01$).

22. Without pressure from my parents I don't think I would have stayed on at school ($p < 0.5$).

23. I sometimes wish I was out at work earning money rather than studying ($p < 0.01$).

Among girls, those going into higher education scored significantly higher on the following items:

4. I spend too long on certain topics, because I get very interested and involved in them ($p < 0.1$).

8. I enjoy feeling that I can do things better than anybody else ($p < 0.1$).

10. I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth ($p < 0.1$).

19. I enjoy working out the solution to a complicated problem ($p < 0.5$).

Girls going into full-time employment scored significantly higher on the following items:

2. I prefer to be given a clearly defined task, preferably with any reading I have to do specified ($p < 0.5$).

22. Without pressure from my parents I don't think I would have stayed on at school ($p < 0.01$).

23. I sometimes wish I was out at work earning money rather than studying ($p < 0.1$).

From these analyses it seems clear that both sex and aspiration significantly affect the responses given to the motivation questionnaire. As it is impossible to compare F ratios and χ^2's it is difficult to say which of the two is the more influential. However, if we look at the sex difference within each aspiration group, we find that the number of items on which the sexes significantly differ are greatly reduced. In the university and polytechnic group the sexes differ significantly on only five items at the 1% level (items 1 and 9 in favour of boys and

items 15, 19, 21 in favour of girls); the college of education group differ on only four items (on items 1, 8 and 17 boys score higher, on item 24 girls score higher); the pupils going into full-time employment still differ on quite a large number - eight in all (on items 1, 8, 12 and 17 boys score higher, on items 11, 15, 21 and 24 girls score higher).

There is therefore some evidence to suggest that different aspirations produce greater differences in motivation between groups of sixth-formers than does a difference in sex. For example girls who are going to university are more like boys who are going to university than girls who are not going to university, and so on. This is a point we shall return to later.

Factor analyses were now carried out on the sub-groups brought about by the two-way classification of pupils by sex and aspiration. Unfortunately it was not possible to do the analysis on two of these groups, boys going to college of education and girls going into full-time employment, because of the small numbers in these groups (N = 42 and 60 respectively). In doing these factor analyses I wanted to answer two questions:

1. Were the differences between the analysis of the pilot study and that of the main study due to different patterns of responding within sub-groups in the sixth-form?

2. Even if differences occurred, would it be possible to represent all groups by the same dimensions?

As with the pilot study, the first analyses yielded a large number of small factors. The eigen values of each factor were plotted to see how many of the factors were largely responsible for explaining the data. From the plots given in Figures 4-7, it

can be seen that the first two factors were responsible for explaining most of the variance, with possibly further contributions from factors three and four; the remaining factors were adding very little. For subsequent analyses, therefore, the number of factors to be identified was limited to four. In the above analysis of the data an oblique rotation was also used in addition to the varimax rotation, to see if that allowed greater ease of data interpretation. The results obtained by both methods of rotation were essentially the same; an oblique rotation was, however, used throughout the remaining analyses, thus removing the necessity for the factors to be orthogonal.

PLOTS OF EIGEN VALUES

Figure 4 BOYS GOING INTO FULL-TIME EMPLOYMENT

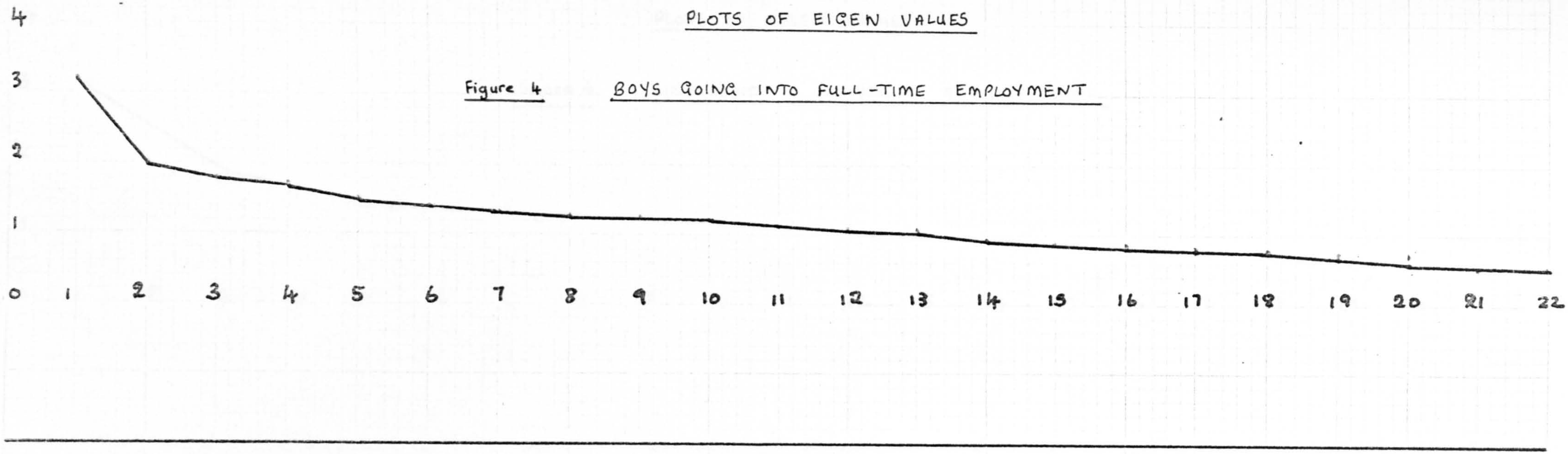
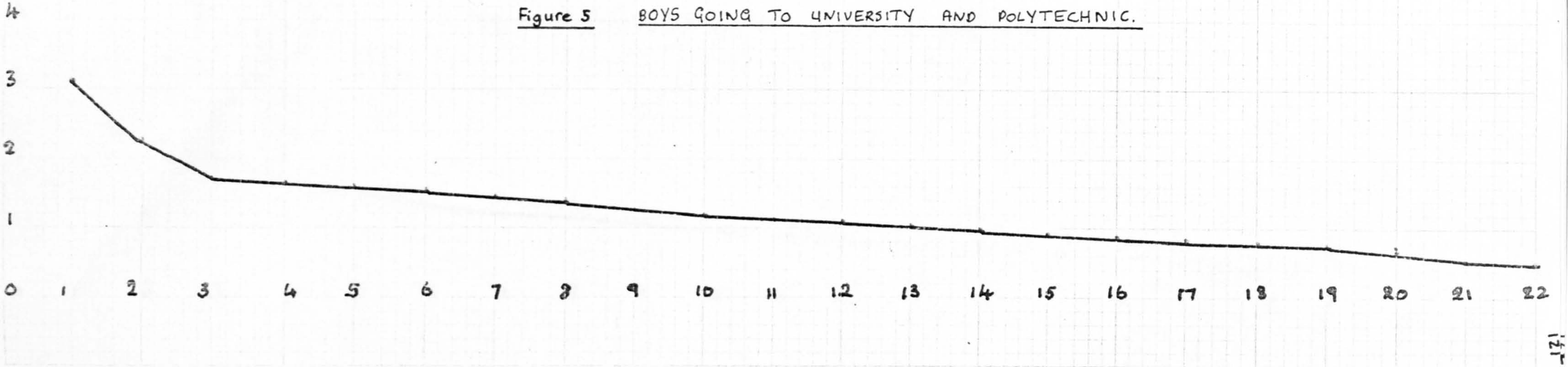


Figure 5 BOYS GOING TO UNIVERSITY AND POLYTECHNIC.



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PLOTS OF EIGEN VALUES

Figure 6 GIRLS GOING TO UNIVERSITY AND POLYTECHNIC.

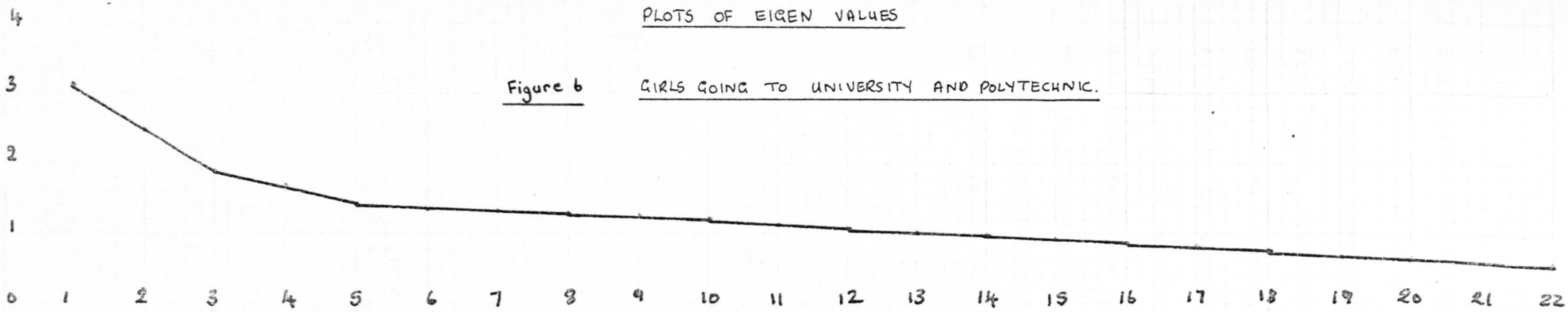
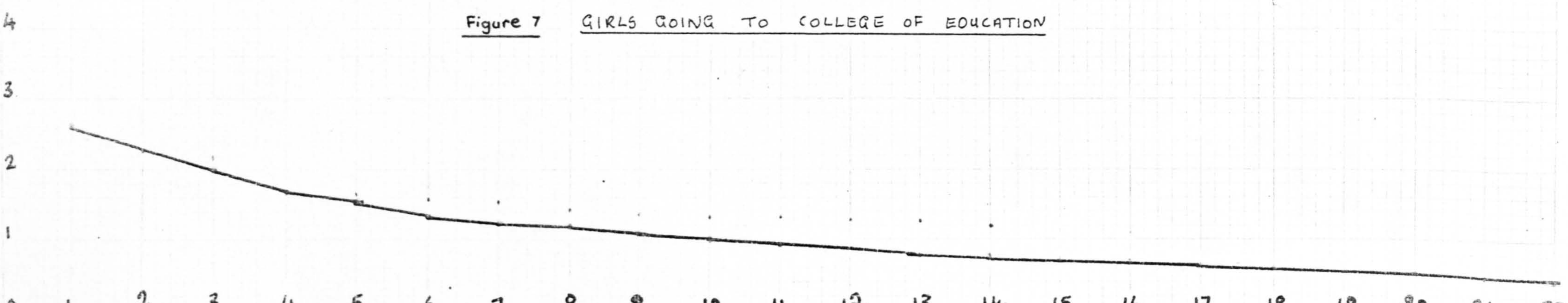


Figure 7 GIRLS GOING TO COLLEGE OF EDUCATION



Boys going to university and polytechnic

The factor analysis of this sub-group produced the four factors given below:

Factor One		Loadings
M2	I prefer to be given a clearly defined task, preferably with any reading I have to do specified.	0.36
M6	I try to keep to set work and avoid following up interesting sidelines.	0.53
M11(-)	I would rather be left to discover things for myself than have everything told to me by the teacher.	-0.53
M12	I usually study only when I am required to, in order to pass exams.	0.62
M15(-)	I like to read a lot of books covering widely differing subjects	-0.61
M16	Without the stimulus of exams I doubt whether I would do much studying.	0.52
M20(-)	I enjoy being part of an enthusiastic group of people working on a project.	-0.30
M21(-)	I read a lot outside my school subjects.	-0.56
M24(-)	I enjoy visiting museums, art galleries and exhibitions.	-0.39

Factor Two		
M3	Good exam results are the most important outcome of one's academic career.	0.62
M5	I would very much like to have a job which will give me high status within the community.	0.54
M8	I enjoy feeling that I can do things better than anybody else.	0.63
M13	I like other people to recognize my achievements.	0.60
M14	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	0.61

		Loadings
Factor Three		
M9(-)	I get disheartened and give up easily if something is too difficult for me.	-0.48
M10	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	0.50
M19	I enjoy working out the solution to a complicated problem.	0.70
M25	I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.	0.71
Factor Four		
M17	If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	0.52
M18	How much prestige a job had would be the most important factor in determining whether or not I would take it.	0.32
M23	I sometimes wish I was out at work earning money rather than studying.	0.62
M26	How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.	0.33

These results were the same as those found in the pilot study. In order to see if the data could be still further reduced, the items were plotted against the first two non-rotated factors, Figure 8*; from this it can be seen clearly that the data can be explained by two main factors, a bi-polar factor which measures intrinsic motivation (Factors One and Three above) and a factor orthogonal to this measuring extrinsic motivation (Factors Two and Four above). The correlation matrices for these two main factors, labelled I and E respectively, are given in Figures 9-10

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* The plots and the correlation matrices are given at the end of the discussion of each factor analysis.

below. One item (M4 "I spend too long on certain topics because I get very intested and involved in them"), which had not appeared in the factor solution, was added to Factor I because it was in the same group as those items on the plotted graph. The alpha co-efficient for this group of items is 0.70, indicating a high level of reliability.

When Factors Two and Four were combined to form the second main factor (E), one item (M23 "I sometimes wish I was out at work earning money rather than studying") behaved oddly in that it correlated positively with items in Factor Four but negatively with items in Factor Two; all the other items correlated positively with one another. On looking at the plot of the non-rotated factors, it became obvious why this was the case, as item M23 loads negatively on Factor Two while all the other items load positively on it. This item was therefore removed from the group of items making up the second Factor (E), which improved the alpha co-efficient from 0.59 to 0.64. One further item which had not appeared in the factor solution was added to this factor, because it correlated with all the other items; this was M1 ("I play any game to win, not just for the fun of it"). The alpha co-efficient again improved, to 0.65.

Two items in the questionnaire had low loadings on all factors and did not correlate with the other items. These were items M7 ("I decided to stay on in the sixth because that was what most of my friends were doing") and M22 ("Without pressure from my parents I don't think I would have stayed on at school"). From the analysis it seems reasonable to conclude that peer group influence and parental pressure are not seen by these pupils as reasons why

they have stayed on in the sixth form*.

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* For these and subsequent diagrams of the factor analysis, the key is as follows:

1 Red lines enclose the items in the two factors which have been combined to make the intrinsic motivation factor (I).

2 Green lines enclose the items in the two factors which have been combined to form the extrinsic motivation factor(E).

3 Broken lines of either colour indicate items which did not appear in the factor solution but which have been added to the two main factors because they correlate well with other items in those factors.

Figure 8

BOYS GOING TO UNIVERSITY AND POLYTECHNIC.

NON-ROTATED FACTORS.

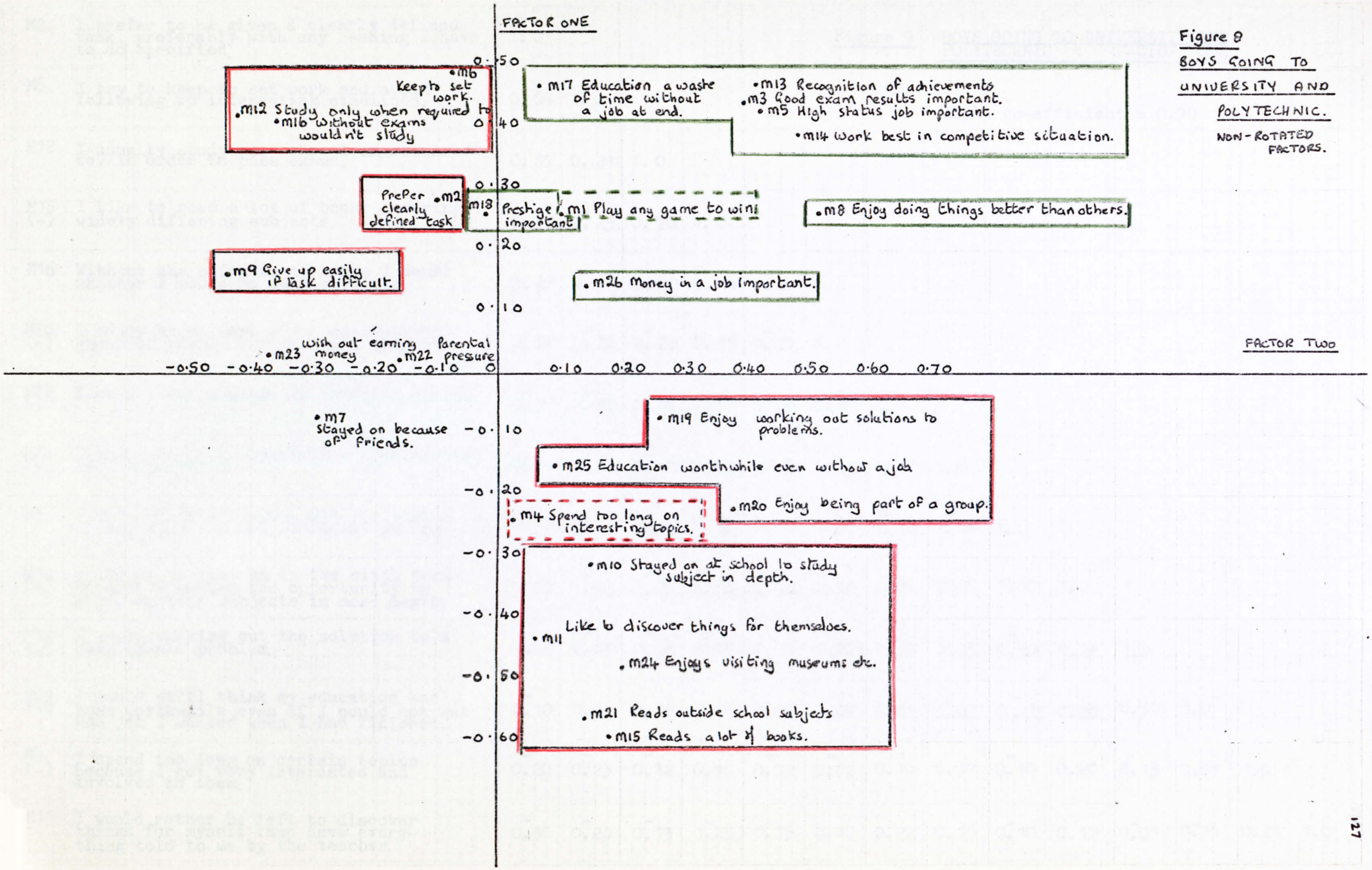

Figure 9 BOYS GOING TO UNIVERSITY AND POLYTECHNIC : FACTOR ONE

Alpha co-efficient = 0.70

		M2	M6	M12	M15	M16	M20	M21	M24	M9	M10	M19	M25	M4	M11
M2	I prefer to be given a clearly defined task, preferably with any reading I have to do specified.	1.0													
M6	I try to keep to set work and avoid following up interesting sidelines.	0.04	1.0												
M12	I usually study only when I am required to, in order to pass exams.	0.17	0.21	1.0											
M15 (-)	I like to read a lot of books covering widely differing subjects.	$\bar{0}$.12	$\bar{0}$.25	$\bar{0}$.20	1.0										
M16	Without the stimulus of exams I doubt whether I would do much studying.	0.23	0.10	0.50	$\bar{0}$.14	1.0									
M20 (-)	I enjoy being part of an enthusiastic group of people working on a project.	0.20	$\bar{0}$.20	$\bar{0}$.20	0.15	$\bar{0}$.27	1.0								
M21 (-)	I read a lot outside my school subjects.	$\bar{0}$.11	$\bar{0}$.20	$\bar{0}$.24	0.57	$\bar{0}$.20	0.10	1.0							
M24 (-)	I enjoy visiting museums, art galleries and exhibitions.	$\bar{0}$.10	$\bar{0}$.20	$\bar{0}$.20	0.32	$\bar{0}$.20	0.25	0.20	1.0						
M9	I get disheartened and give up easily if something is too difficult for me.	0.10	0.10	0.22	$\bar{0}$.20	0.10	$\bar{0}$.10	$\bar{0}$.10	$\bar{0}$.04	1.0					
M10 (-)	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	0.10	$\bar{0}$.10	$\bar{0}$.20	0.04	$\bar{0}$.10	0.10	0.14	0.10	$\bar{0}$.10	1.0				
M19 (-)	I enjoy working out the solution to a complicated problem.	0.02	$\bar{0}$.01	$\bar{0}$.04	$\bar{0}$.05	0.03	0.02	0.10	0.03	$\bar{0}$.30	0.26	1.0			
M25 (-)	I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.	$\bar{0}$.10	0.10	0.12	0.14	0.05	0.04	0.01	0.22	$\bar{0}$.25	0.20	0.30	1.0		
M4 (-)	I spend too long on certain topics because I get very interested and involved in them.	$\bar{0}$.20	$\bar{0}$.23	$\bar{0}$.12	0.10	$\bar{0}$.02	$\bar{0}$.02	0.10	0.10	$\bar{0}$.10	0.20	0.13	0.01	1.0	
M11	I would rather be left to discover things for myself than have everything told to me by the teacher.	$\bar{0}$.30	$\bar{0}$.20	$\bar{0}$.13	$\bar{0}$.25	$\bar{0}$.15	0.10	0.22	0.10	$\bar{0}$.10	0.12	$\bar{0}$.01	$\bar{0}$.14	0.21	1.0

Figure 10

BOYS GOING TO UNIVERSITY AND POLYTECHNIC: FACTOR TWO

Alpha co-efficient = 0.65

		M3	M5	M13	M14	M17	M18	M26	M1	M8
M3	Good exam results are the most important outcome of one's academic career.	1.0								
M5	I would very much like to have a job which will give me high status within the community.	0.34	1.0							
M13	I like other people to recognise my achievements.	0.26	0.32	1.0						
M14	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	0.25	0.30	0.24	1.0					
M17	If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	0.20	0.20	0.10	0.23	1.0				
M18	How much prestige a job had would be the most important factor in determining whether or not I would take it.	0.00	0.24	0.05	0.10	0.11	1.0			
M26	How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.	0.30	0.12	-0.02	0.14	0.13	0.10	1.0		
M1	I play any game to win, not just for the fun of it.	0.22	0.10	0.10	0.20	0.24	-0.01	0.13	1.0	
M8	I enjoy feeling that I can do things better than anybody else.	0.24	0.20	0.40	0.30	0.15	0.03	0.10	0.01	1.0

Girls going to university and polytechnic

The factor solution for girls going to university and polytechnic is very similar to that for boys; the four factors produced contain almost identical items. There are, however, some differences, which will be discussed later. Variable M7 ("I decided to stay on in the sixth form because that was what most of my friends were doing") had to be excluded from the analysis, as all the girls in this group responded "False" to it.

Factor One		Loadings
M4	I spend too long on certain topics, because I get very interested and involved in them.	0.32
M6(-)	I try to keep to set work and avoid following up interesting sidelines.	-0.54
M10	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	0.48
M11	I would rather be left to discover things for myself than have everything told to me by the teacher.	0.54
M15	I like to read a lot of books covering widely differing subjects.	0.60
M19	I enjoy working out the solution to a complicated problem.	0.41
M21	I read a lot outside my school subjects.	0.64
M24	I enjoy visiting museums, art galleries and exhibitions.	0.56

Factor Two		
M3	Good exam results are the most important outcome of one's academic career.	0.52
M14	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	0.56
M17	If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	0.54

Factor Two (cont...)		Loadings
M18	How much prestige a job had would be the most important factor in determining whether or not I would take it.	0.62
M25(-)	I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.	-0.52
M26	How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.	0.31

Factor Three		
M9	I get disheartened and give up easily if something is too difficult for me.	0.41
M12	I usually study only when I am required to, in order to pass exams.	0.69
M16	Without the stimulus of exams I doubt whether I would do much studying.	0.59
M20(-)	I enjoy being part of an enthusiastic group of people working on a project.	-0.63

Factor Four		
M1	I play any game to win, not just for the fun of it.	0.44
M5	I would very much like to have a job which will give me high status within the community.	0.68
M8	I enjoy feeling that I can do things better than anybody else.	0.50
M13	I like other people to recognise my achievements.	0.35
M22	Without pressure from my parents I don't think I would have stayed on at school.	0.36
M23	I sometimes wish I was out at work earning money rather than studying.	0.24

The same procedure was then followed as for the previous analysis.

The items in these four factors were plotted against the first two unrotated factors (Figure 11) and a similar pattern to that of the boys emerged: a bi-polar factor measuring intrinsic motivation - Factors One and Three above plus item M2 ("I prefer to be given a clearly defined task, preferably with any reading I have to do specified"); and an orthogonal factor measuring extrinsic motivation - Factors Two and Four above. The correlation matrices for these two main factors (I and E) are given in Figures 12 - 13 below. The first factor has the same alpha co-efficient as for boys (0.70), again indicating that this is a very reliable scale. The second main factor, however, produced a much lower alpha co-efficient, (0.53). Three of the items which appeared in the factor solution had not been included because they did not cluster with the other items on the plotted graph; they were M22 ("Without pressure from my parents I don't think I would have stayed on at school"); M23 ("I sometimes wish I was out at work earning money rather than studying"); M1 ("I play any game to win, not just for the fun of it"). Adding them to the correlation matrix did not improve the alpha co-efficient; on the contrary it was reduced to 0.47. Although 0.53 is not a very high alpha co-efficient, it does indicate some degree of reliability; but obviously this scale is not as reliable for girls as it was for boys.

Figure 11

GIRLS GOING TO UNIVERSITY AND POLYTECHNIC.

NON-ROTATED FACTORS.

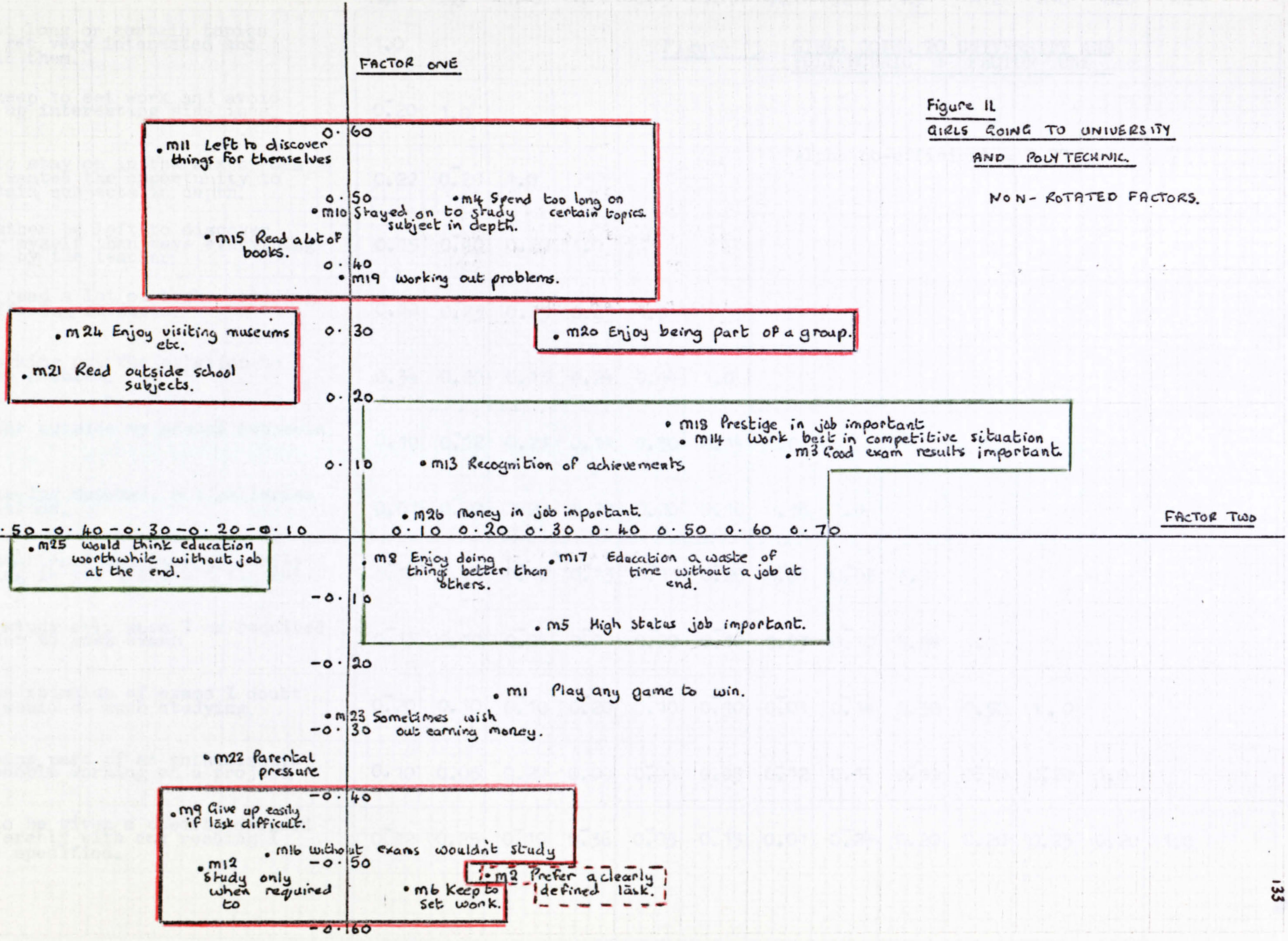

Figure 13 GIRLS GOING TO UNIVERSITY AND POLYTECHNIC : FACTOR ONE

Alpha co-efficient = 0.70

		M4	M6	M10	M11	M15	M19	M21	M24	M9	M12	M16	M20	M2
M4	I spend too long on certain topics because I get very interested and involved in them.	1.0												
M6 (-)	I try to keep to set work and avoid following up interesting sidelines.	-0.20	1.0											
M10	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in depth.	0.22	-0.20	1.0										
M11	I would rather be left to discover things for myself than have everything told to me by the teacher.	0.15	-0.40	0.20	1.0									
M15	I like to read a lot of books covering widely differing subjects.	0.10	-0.23	0.25	0.25	1.0								
M19	I enjoy working out the solution to a complicated problem.	0.34	0.20	0.13	0.24	0.14	1.0							
M21	I read a lot outside my school subjects.	0.10	-0.12	0.21	0.11	0.50	0.14	1.0						
M24	I enjoy viewing museums, art galleries and exhibitions.	0.01	-0.20	0.20	0.20	0.20	0.10	0.36	1.0					
M9 (-)	I get disheartened and give up easily if something is too difficult for me.	-0.10	0.21	-0.10	-0.13	-0.13	-0.20	-0.04	-0.02	1.0				
M12 (-)	I usually study only when I am required to, in order to pass exams.	-0.13	0.10	-0.04	-0.20	-0.20	-0.10	0.03	-0.10	0.24	1.0			
M16 (-)	Without the stimulus of exams I doubt whether I would do much studying.	-0.20	0.10	-0.10	-0.20	-0.10	-0.10	-0.01	-0.14	0.30	0.50	1.0		
M20	I enjoy being part of an enthusiastic group of people working on a project.	0.10	0.05	0.20	0.00	-0.01	0.03	-0.12	0.10	-0.10	-0.30	-0.20	1.0	
M2	I prefer to be given a clearly defined task, preferably with any reading I have to do specified.	-0.22	0.25	-0.10	-0.36	-0.05	-0.15	0.01	-0.24	0.20	0.20	0.25	0.20	1.0

Figure 12

GIRLS GOING TO UNIVERSITY AND POLYTECHNIC : FACTOR TWO

Alpha co-efficient = 0.53

		M18	M14	M3	M26	M13	M17	M5	M8	M25
M18	How much prestige a job had would be the most important factor in determining whether or not I would take it.	1.0								
M14	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	0.21	1.0							
M3	Good exam results are the most important outcome of one's academic career.	0.21	0.30	1.0						
M26	How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.	0.20	0.10	-0.04	1.0					
M13	I like other people to recognise my achievements.	0.10	-0.10	0.20	0.10	1.0				
M17	If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	0.21	0.12	0.11	0.20	-0.04	1.0			
M5	I would very much like to have a job which will give me high status within the community.	0.13	0.22	0.11	0.12	0.13	0.10	1.0		
M8	I enjoy feeling that I can do things better than anybody else.	-0.10	0.12	-0.04	-0.03	0.10	-0.01	0.20	1.0	
M25 (-)	I would think my education had been worthwhile even if I could not get the job I wanted when I had finished.	-0.21	-0.20	-0.21	-0.03	-0.20	-0.21	0.10	0.11	1.0

The factor solutions for boys and girls going to university and polytechnic are very similar to each other, but there are some minor differences between them which are given below, based on the two main factors.

Factor I

Items in common

M2(-) I prefer to be given a clearly defined task, preferably with any reading I have to do specified.

M4 I spend too long on certain topics, because I get very interested and involved in them.

M6(-) I try to keep to set work and avoid following up interesting sidelines.

M9(-) I get disheartened and give up easily if something is too difficult for me.

M10 I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.

M11 I would rather be left to discover things for myself than have everything told to me by the teacher.

M12(-) I usually study only when I am required to, in order to pass exams.

M15 I like to read a lot of books covering widely differing subjects.

M16(-) Without the stimulus of exams I doubt whether I would do much studying.

M19 I enjoy working out the solution to a complicated problem.

M20 I enjoy being part of an enthusiastic group of people working on a project.

M21 I read a lot outside my school subjects.

M24 I enjoy visiting museums, art galleries and exhibitions.

Differences

The boys' solution included:-

M25 I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.

Factor E

Items in common

M3 Good exam results are the most important outcome of one's academic career.

M5 I would very much like to have a job which will give me high status within the community.

M8 I enjoy feeling that I can do things better than anybody else.

M13 I like other people to recognise my achievements.

M14 I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.

M17 If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.

M18 How much prestige a job had would be the most important factor in determining whether or not I would take it.

M26 How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.

Differences

The boy's solution included:

M1 I play any game to win, not just for the fun of it.

The girls' solution included:

M25(-) I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.

Items that appeared in neither solution

M7 I decided to stay on in the sixth form because that was what most of my friends were doing.

M22 Without pressure from my parents I don't think I would have stayed on at school.

M23 I sometimes wish I was out at work earning money rather than studying.

The above three items therefore mark the area of difference

between the main analysis and the pilot analysis. M7 and M22 correlated with the items at the negative end of the intrinsic motivation scale, while M23 correlated with items in the extrinsic motivation scale. Apart from these small differences, the two analyses described above replicated the pilot study, the two main factors produced being the same in both cases.

The difference between boys and girls is very small, concentrated on only two items; one of these (M1) appears only in the boys' solution, while the other (M25) appears positively on Factor One for boys and negatively on Factor Two for girls, differences which are clearly reconcilable.

The two main factors that emergy from the factor analysis can be interpreted using the following model. A bi-polar (I) labelled intrinsic motivation, which is concerned with motivation derived from activities within the school system, and a second factor (E) labelled extrinsic motivation, which is concerned with motivation to stay in the system derived from external influences. These two factors are orthogonal, the correlation between scores* on the two factors being -0.01 for girls and 0.24 for boys neither of which is significant. The two main factors can be expressed diagrammatically in the following way:

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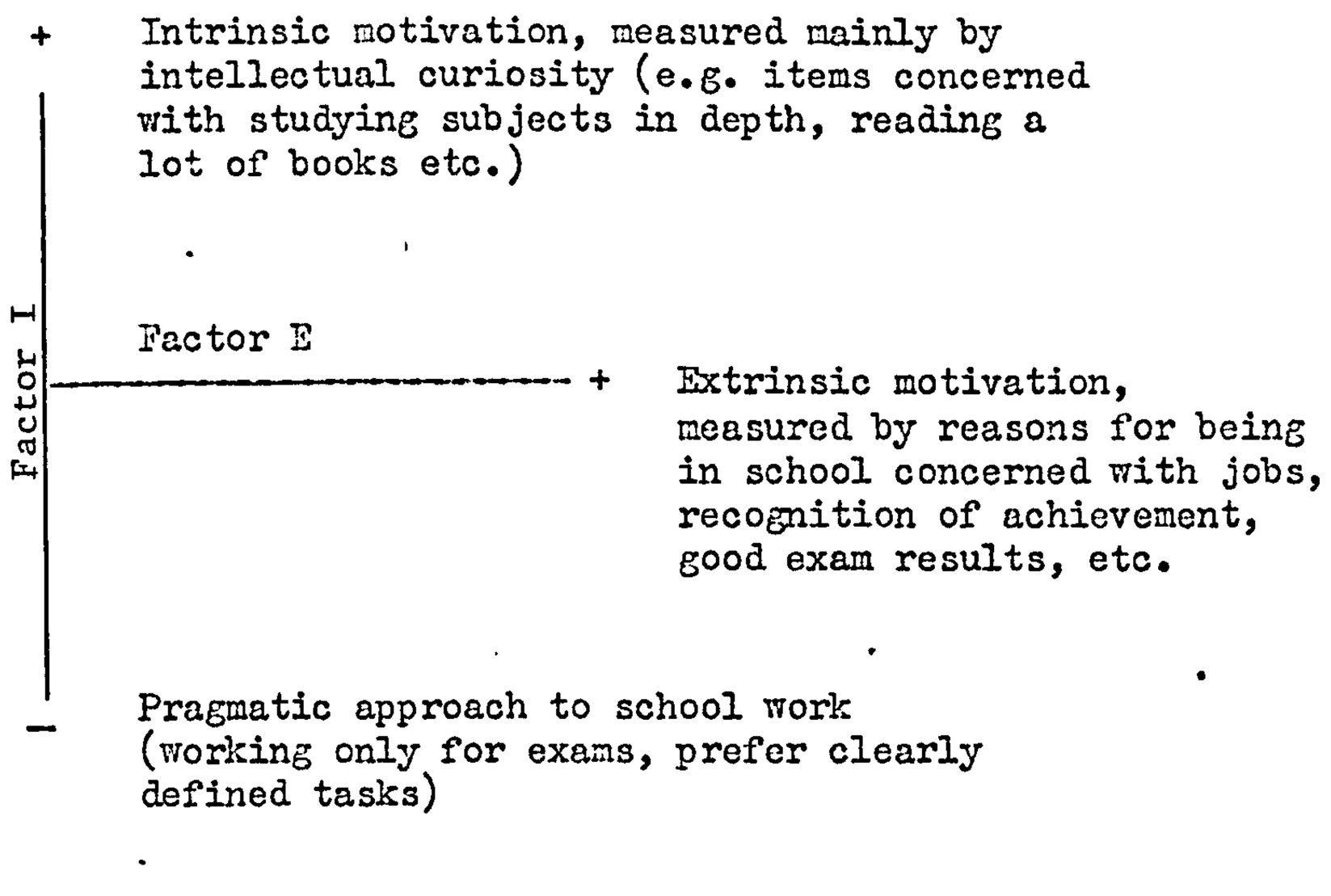
* See Appendix E for a detailed description of how the dimensions were scored. Factor One was scored in the direction of high intrinsic motivation, and Factor Two in the direction of high extrinsic motivation.



A scattergram of the pupils' scores on the two factors showed that for some pupils motivation within the system (i.e. a high score on Factor I) is also the motivation to be in the system (i.e. a low score on Factor E). For these pupils it would appear that intrinsic motivation is the main motivating force, and that this operates both in school and outside it, in that activities done in school are synonymous with the activities they choose to do outside school. For example, they stayed on at school to study a certain subject in depth, they like discovering things for themselves rather than having everything told to them by the teacher; outside school they like visiting museums, etc., and they read a lot of books both around their school subjects and in general. School therefore seems to be an integral part of their lives.

Other pupils have a low score on Factor I - they have a very pragmatic approach to school, work only when they have to in order to pass exams, and have a preference for clearly defined tasks - but they have a high score on Factor E. They

appear to value the external benefits a good education can bring, and for that reason they are prepared to do the minimum amount of school work that is necessary in order to achieve those external benefits.

Some pupils, however, have high scores on both Factors I and E, they value the external benefits a good education can give them, but at the same time they appear to "enjoy" school and have a high level of intrinsic motivation, like the first group mentioned above.

A small minority of pupils have low scores on both factors so what motivates them to stay in school is a question this present project cannot answer. Perhaps for this small number of pupils pressure from parents is the important motivating force, but their numbers are too small for this to influence the factor analysis. The "scores" of the pupils however are fairly evenly distributed on the two dimensions so not all of them come into the categories described above.

Table 23 Distribution of scores of boys going to university and polytechnic

Factor E - extrinsic motivation
(Maximum score 18)

Factor I - intrinsic motivation
(Maximum score 28)

	High score (12-18)	Medium score (6-11)	Low score (1-5)
High score (20-28)	9 6.39%	31 22.01%	9 6.39%
Medium score (12-19)	25 17.75%	40 28.4%	12 8.25%
Low score (4-11)	9 6.39%	4 2.84%	2 1.42%

Table 24 Distribution of scores of girls going to university and polytechnic

Factor E - extrinsic motivation
(Maximum score 18)

Factor I - intrinsic motivation
(Maximum score 28)

	High score (12-18)	Medium score (6-11)	Low score (1-5)
High score (20-28)	1 0.81%	16 12.95%	26 21.06%
Medium score (12-19)	0 0.00%	26 21.06%	30 24.30%
Low score (4-11)	0 0.00%	9 7.29%	15 12.15%

From the analysis it would therefore seem possible to describe some pupils as exclusively intrinsically motivated, and some as exclusively extrinsically motivated.

However, a substantial number of pupils appear to be both intrinsically and extrinsically motivated. A small minority of pupils appear to lack motivation in terms of these dimensions; clearly for some pupils the reasons for being in the sixth form have not been covered by this particular motivation questionnaire.

The next question to ask is whether the remaining groups of pupils can be fitted into this model. The factor analysis for girls going to college of education is given below. The four factors that emerge are as follows:

<u>Girls going to college of education (and art, music or drama college</u>

<u>Factor One</u>		<u>Loadings</u>
M7	I decided to stay on in the sixth form because that was what most of my friends were doing.	0.47
M11(-)	I would rather be left to discover things for myself than have everything told to me by the teacher.	-0.39
M15(-)	I like to read a lot of books covering widely differing subjects.	-0.63
M16	Without the stimulus of exams I doubt whether I would do much studying.	0.32
M21(-)	I read a lot outside my school subjects.	-0.70
M23	I sometimes wish I was out at work earning money rather than studying.	0.45
M25(-)	I would still think that my education had been worthwhile even if I could not get the job I wanted when I had finished.	-0.20

Factor Two		Loadings
M3	Good exam results are the most important outcome of one's academic career.	0.64
M5	I would very much like to have a job which will give me high status within the community.	0.58
M17	If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	0.58
M18	How much prestige a job had would be the most important factor in determining whether or not I would take it.	0.68
M20	I enjoy being part of an enthusiastic group of people working on a project.	0.23
M26	How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.	0.43

Factor Three		
M2	I prefer to be given a clearly defined task, preferably with any reading I have to do specified.	0.34
M7(-)	I decided to stay on in the sixth form because that was what most of my friends were doing.	-0.43
M8	I enjoy feeling that I can do things better than anybody else.	0.55
M13	I like other people to recognise my achievements.	0.59
M14	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	0.44
M22(-)	Without pressure from my parents I don't think I would have stayed on at school.	-0.60

Factor Four		Loadings
M4(-)	I spend too long on certain topics, because I get very interested and involved in them.	-0.50
M6	I try to keep to set work and avoid following up interesting sidelines.	0.59
M10(-)	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	-0.63
M12	I usually study only when I am required to, in order to pass exams.	0.50
M19(-)	I enjoy working out the solution to a complicated problem.	-0.42

Following the same procedure as before, the items were plotted against the two non-rotated factors, (Figure 14). Similar results emerged as for the previous analysis, one bi-polar factor made up of items measuring intrinsic motivation and one orthogonal to it measuring extrinsic motivation. The two main factors combined, respectively, Factors One and Four above and Factors Two and Three with some modifications. Item M7 ("I decided to stay on in the sixth form because that was what most of my friends were doing") appeared in two factor solutions - One and Three; on checking, however, it was found that this item did not correlate with any of the other items in either of the factor solutions, and so it was excluded altogether. A number of items which appeared in the factor solution, but did not correlate very well with the other items were excluded. These were items M19 - "I enjoy working out the solution to a complicated problem"; M13 - "I like other people to recognise my achievements"; M22 - "Without pressure from my parents I don't think I would have stayed on at school", and M20 - "I enjoy being part of an enthusiastic group working on a project". Two items, M1 ("I play

any game to win, not just for the fun of it") and M24 ("I enjoy visiting museums, art galleries and exhibitions") were added because they correlated well with the other items. This left only one item which did not appear in the factor solution and which did not correlate with the other items - M9 ("I get disheartened and give up easily if something is too difficult for me"). The correlation matrices for the two main factors (I and E) are given in Figures 15 - 16 below.

The two alpha co-efficients are 0.62 and 0.61 respectively; the first of these is not as good as for the previous analysis but the second one is marginally better than that for girls going to university and polytechnic. Both alpha co-efficients, however, indicate a reliable scale.

Figure 14

GIRLS GOING TO COLLEGE OF EDUCATION

NON-ROTATED FACTORS.

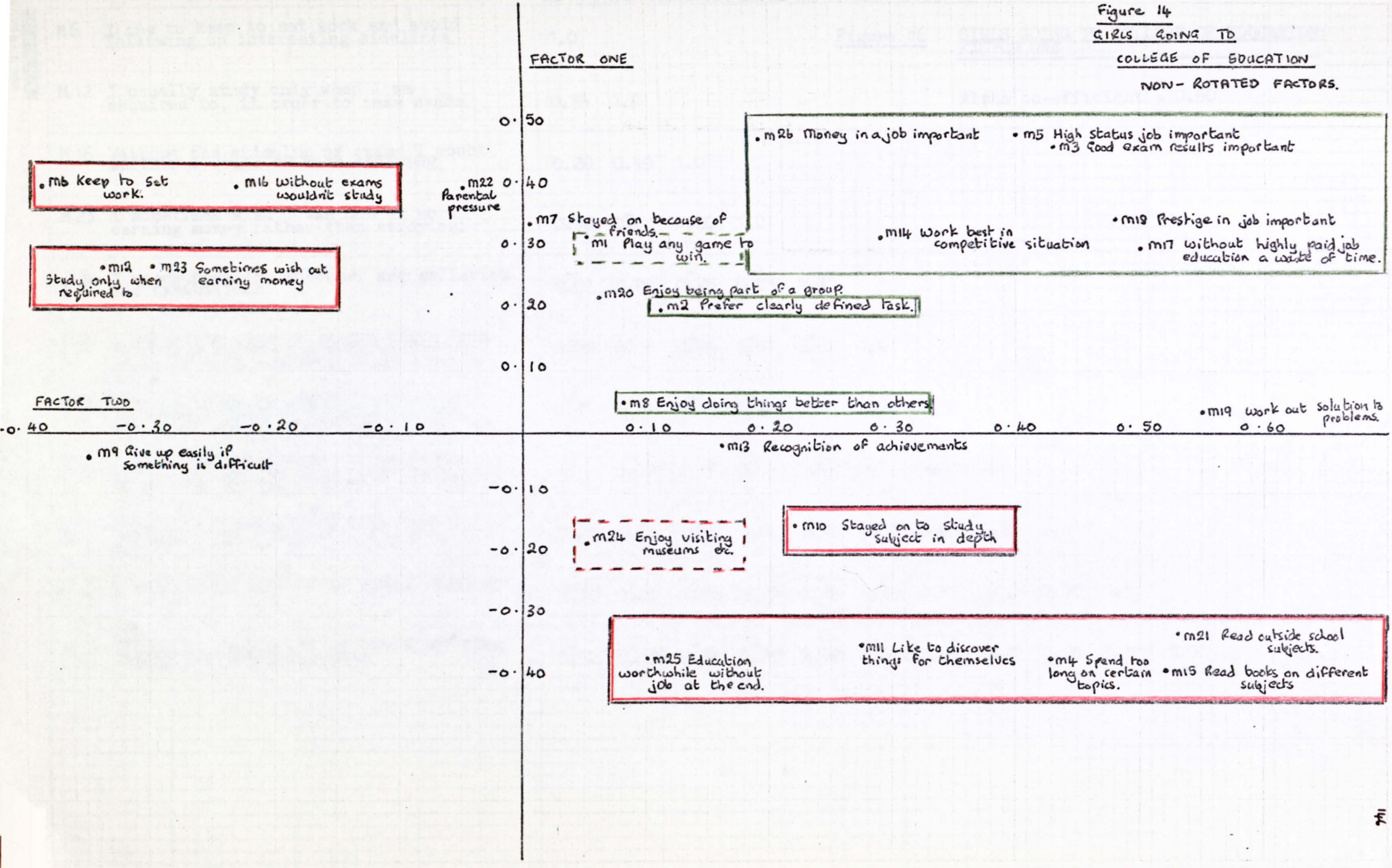


Figure 15

GIRLS GOING TO COLLEGE OF EDUCATION I: FACTOR TWO

Alpha co-efficient = 0.61

		M3	M5	M18	M17	M26	M14	M2	M8	M1
M3	Good exam results are the most important outcome of one's academic career.	1.0								
M5	I would very much like to have a job which will give me high status within the community.	0.34	1.0							
M18	How much prestige a job had would be the most important factor in determining whether or not I would take it.	0.40	0.23	1.0						
M17	If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	0.25	0.30	0.41	1.0					
M26	How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.	0.20	0.24	0.10	0.25	1.0				
M14	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	0.20	0.20	-0.02	0.14	-0.00	1.0			
M2	I prefer to be given a clearly defined task, preferably with any reading I have to do specified.	0.30	0.20	0.14	-0.04	0.00	0.13	1.0		
M8	I enjoy feeling that I can do things better than anybody else.	0.02	0.13	-0.03	-0.04	-0.01	0.20	0.05	1.0	
M1	I play any game to win, not just for the fun of it.	0.30	0.11	-0.02	-0.03	0.12	0.30	0.03	0.20	1.0

		M6	M12	M16	M23	M24	M10	M25	M11	M4	M21	M15
M6	I try to keep to set work and avoid following up interesting sidelines.	1.0										
M12	I usually study only when I am required to, in order to pass exams.	0.34	1.0									
M16	Without the stimulus of exams I doubt whether I would do much studying.	0.20	0.40	1.0								
M23	I sometimes wish I was out at work earning money rather than studying.	0.10	0.01	0.20	1.0							
M24 (-)	I enjoy visiting museums, art galleries and exhibitions.	0.01	0.00	0.20	0.01	1.0						
M10 (-)	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth	0.20	0.13	0.20	0.01	0.02	1.0					
M25 (-)	I would think my education had been worthwhile even if I could not get the job I wanted when I have finished.	0.01	0.21	0.20	0.22	0.10	0.04	1.0				
M11 (-)	I would rather be left to discover things for myself than have everything told to me by the teacher.	0.20	0.01	0.02	0.14	0.03	0.11	0.10	1.0			
M4 (-)	I spend too long on certain topics because I get interested and involved in them.	0.43	0.14	0.10	0.03	0.10	0.12	0.04	0.20	1.0		
M21 (-)	I read a lot outside my school subjects.	0.20	0.12	0.20	0.20	0.10	0.10	0.10	0.23	0.10	1.0	
M15 (-)	I like to read a lot of books covering widely differing subjects.	0.12	0.12	0.14	0.20	0.10	0.01	0.10	0.20	0.20	0.51	1.0

Figure 16 GIRLS GOING TO COLLEGE OF EDUCATION: FACTOR ONE

Alpha co-efficient = 0.60

. The two main factors that emerge are very similar to the ones found for pupils going to university and polytechnic. The main differences are that in Factor I item M23 ("I sometimes wish I was out at work earning money rather than studying") is included in this factor for college of education girls, but not for girls going to university or polytechnic. Excluded from this factor for college of education girls are items M9 ("I get disheartened and give up easily if something is too difficult for me") and M20 ("I enjoy being part of an enthusiastic group of people working on a project"). Item M2 ("I prefer to be given a clearly defined task, preferably with any reading I have to do specified") has moved from Factor I for university girls to Factor E for college of education girls. Item 25 ("I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished") has moved in the opposite direction from Factor E for university girls to Factor I for college of education girls, who in this respect are more like boys going to university. From this analysis it would seem reasonable to conclude that, in the main, the model described earlier with reference to boys and girls going to university is appropriate also for girls going to college of education.

Finally, the factor analysis for boys going into full-time employment will be considered.

Boys going into full-time employment

The analysis for boys going into full-time employment yielded the following four factors.

		Loadings
Factor One		
M1	I play any game to win, not just for the fun of it.	-0.37
M2	I prefer to be given a clearly defined task, preferably with any reading I have to do specified.	0.32
M6	I try to keep to set work and avoid following up interesting sidelines.	0.52
M9	I get disheartened and give up easily if something is too difficult for me.	0.43
M10(-)	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	-0.19
M11(-)	I would rather be left to discover things for myself than have everything told to me by the teacher.	-0.30
M17	If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	0.52
M23	I sometimes wish I was out at work earning money rather than studying.	0.51
M25(-)	I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.	-0.63
M26	How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.	0.68
Factor Two		
M3	Good exam results are the most important outcome of one's academic career.	0.44
M4	I spend too long on certain topics because I get very interested and involved in them.	0.25
M7(-)	I decided to stay on in the sixth form because that was what most of my friends were doing.	-0.34
M13	I like other people to recognise my achievements.	0.35
M14	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	0.37

Factor Two (cont....)		Loadings
M19	I enjoy working out the solution to a complicated problem.	0.74
M22(-)	Without.pressure from my parents I don't think I would have stayed on at school.	-0.47

Factor Three

M2	I prefer to be given a clearly defined task, preferably with any reading I have to do specified.	0.45
M5	I would very much like to have a job which will give me high status within the community.	0.56
M14	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	0.57
M18	How much prestige a job had would be the most important factor in determining whether or not I would take it.	0.38
M20	I enjoy being part of an enthusiastic group of people working on a project.	0.58

Factor Four

M10	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	0.44
M12(-)	I usually study only when I am required to, in order to pass exams.	-0.52
M13(-)	I like other people to recognise my achievements.	-0.39
M15	I like to read a lot of books covering widely differing subjects.	0.61
M16(-)	Without the stimulus of exams I doubt whether I would do much studying.	-0.59
M21	I read a lot outside my school subjects.	0.60
M24	I enjoy visiting museums, art galleries and exhibitions.	0.45

This analysis is the most difficult to interpret, and plotting the items against the first two non-rotated factors was in this instance all the more valuable, as the two main factors emerged very clearly from this exercise (Figure 17). There is again a bi-polar factor, but its content is different from the previous ones. Here the pragmatic approach to school is combined with an emphasis on money. At the opposite end of the factor are some of the items that appear in this position in the previous analyses - M10 ("I wanted to stay on in the sixth form because I wanted the opportunity to study subjects in depth"), and M11 ("I would rather be left to discover things for myself than have everything told to me by the teacher"); these two items have strong negative correlations both with the pragmatic approach to school and with the desire for money. The importance attached to money and the belief that an education is the way to a better-paid job is further emphasised by the fact that these pupils agree that their education would be a waste of time without a highly paid job at the end and, conversely, disagree with the statement that they would think their education had been worthwhile even if they couldn't get the job they wanted (25). The items concerned with activities outside school which indicate a level of intrinsic motivation (items concerned with reading outside school and visiting museums, etc. - M15,M21 and M24) in this instance do not correlate with items measuring intrinsic motivation within the school, M10 and M11, nor do they correlate negatively with the pragmatic approach to school as they did in the other analyses. For these pupils, it would seem that the activities outside school which could be interpreted as indicating some level of intrinsic motivation are not linked with activities inside school; unlike

the pupils who are heading for university, school for this group of pupils does not appear to be a natural extension of their interests. For this group school does seem to be a means to an end, that end being a well-paid job.

This main bi-polar factor combines Factors One and Four above, with the exception of the three items mentioned (M15,M21 and M24) which, although they appear in the factor solution, do not correlate well with the other items; they are correlated negatively with some items and positively with others, and the correlations are on the whole so low that it is difficult to say that these items really correlate at all with the others in the factor. Item M13 ("I like other people to recognise my achievements") appears in both Factor Two and Four, but correlates better with the items in Factor Two so it was left there and taken out of Factor Four. The final version, therefore, of this main bi-polar factor - Factor I - has an alpha co-efficient of 0.70 indicating a reliable scale.

The second factor (E), orthogonal to the first as in the other analyses is concerned with competitiveness, status and the recognition of achievement, and it combines Factors Two and Three above. The items that make up this factor, however, are different from those in the other analyses. The items concerned with money are not on this factor but in Factor I, as is also item M1 ("I play any game to win, not just for the fun of it"). Three items - M4 ("I spend too long on certain topics because I get very interested and involved in them"), M20 ("I enjoy being part of an enthusiastic group of people working on a project"), M19 ("I enjoy working out the solution to a complicated problem") - load on this factor rather than Factor I. The first two of these

items do not correlate very well with the other items, and their presence or absence in the scale makes no difference to the alpha co-efficient. M19, however, does correlate quite well with the other items, and this reveals the slight ambiguity of this item mentioned in the description of the pilot study; solving problems can be seen as an intellectually satisfying exercise, as it appears to be for the other groups in the analysis, or it can be seen, as it probably is here, as a means of impressing people and so gaining recognition and status. Factor E, however, does not form a very reliable scale, having an alpha co-efficient of only 0.47; this perhaps indicates that status and recognition are not of primary importance to this group, their main motivation being that of securing well-paid jobs. The one item on this factor which overlapped with Factor I - M2 - was excluded from this factor.

Three other items were excluded from this second main factor; these were M7 ("I decided to stay on in the sixth form because that was what most of my friends were doing"), M18 ("How much prestige a job had would be the most important factor in determining whether or not I would take it"), and M22 ("Without pressure from my parents I don't think I would have stayed on at school"). These items did not correlate well with the other items in the factors: M7 had very low negative correlations with the other items, while M18 and M22 sometimes had low positive correlations with other items and in other instances low negative correlations.

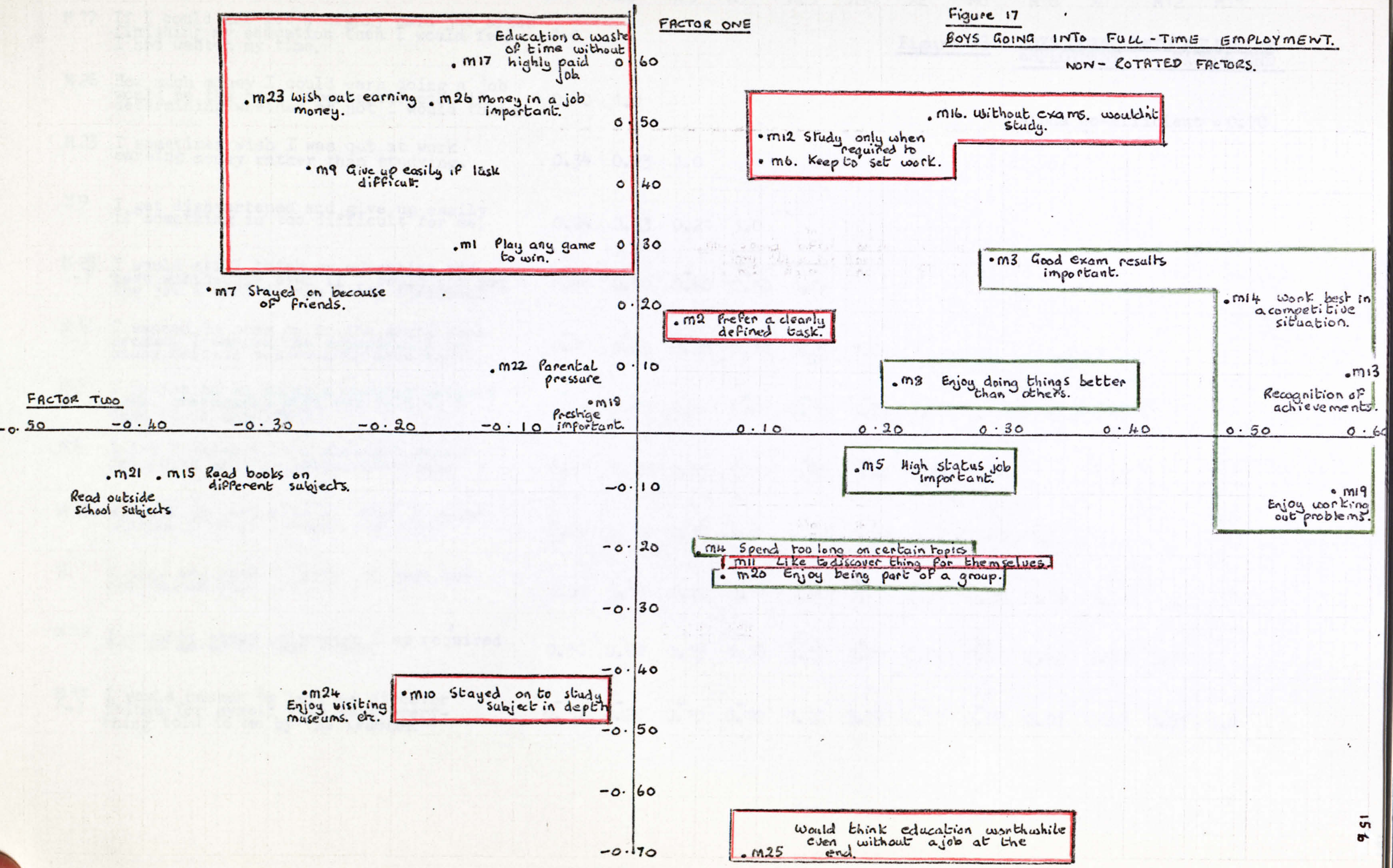
The results of the analyses do allow one to explain why there was a difference between the results of the pilot and main studies. The pilot study results are largely replicated in the

main analysis for both girls and boys going to university and for girls going to college of education, although there are some small differences in the case of the latter group. The pattern of responding for boys going into full-time employment is, however, very different from both the pilot study results and the other groups in the main analysis. This was obviously the cause of the lack of clarity in the first factor analysis of the main study, which used all pupils in the main sample. The correlation matrices for this group are given in Figures 18 - 19.

Figure 17

BOYS GOING INTO FULL-TIME EMPLOYMENT.

NON-ROTATED FACTORS.



		M17	M26	M23	M9	M25	M10	M2	M6	M16	M1	M12	M11
M17	If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	1.0											
M26	How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.	0.40	1.0										
M23	I sometimes wish I was out at work earning money rather than studying.	0.34	0.23	1.0									
M9	I get disheartened and give up easily if something is too difficult for me.	0.24	0.23	0.21	1.0								
M25 (-)	I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.	-0.40	-0.40	-0.40	-0.30	1.0							
M10 (-)	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	-0.10	-0.03	-0.20	-0.10	-0.23	1.0						
M2	I prefer to be given a clearly defined task, preferably with any reading I have to do specified.	-0.03	0.12	0.21	-0.00	-0.10	-0.20	1.0					
M6	I try to keep to set work and avoid following up interesting sidelines.	0.21	0.33	0.20	0.01	-0.20	-0.20	0.14	1.0				
M16	Without the stimulus of exams I doubt whether I would do much studying.	-0.20	0.10	0.10	0.14	-0.31	-0.30	-0.10	0.02	1.0			
M1	I play any game to win, not just for the fun of it.	0.20	0.14	0.20	0.11	-0.20	-0.10	-0.02	0.20	0.10	1.0		
M12	I usually study only when I am required to, in order to pass exams.	0.30	0.02	0.15	0.20	-0.24	-0.20	0.00	-0.01	0.40	0.02	1.0	
M11 (-)	I would rather be left to discover things for myself than have everything told to me by the teacher.	-0.10	-0.20	-0.10	-0.10	0.20	0.14	-0.10	-0.20	0.03	0.10	0.01	1.0

Figure 18

BOYS GOING INTO FULL-TIME EMPLOYMENT : FACTOR ONE

Alpha co-efficient = 0.70

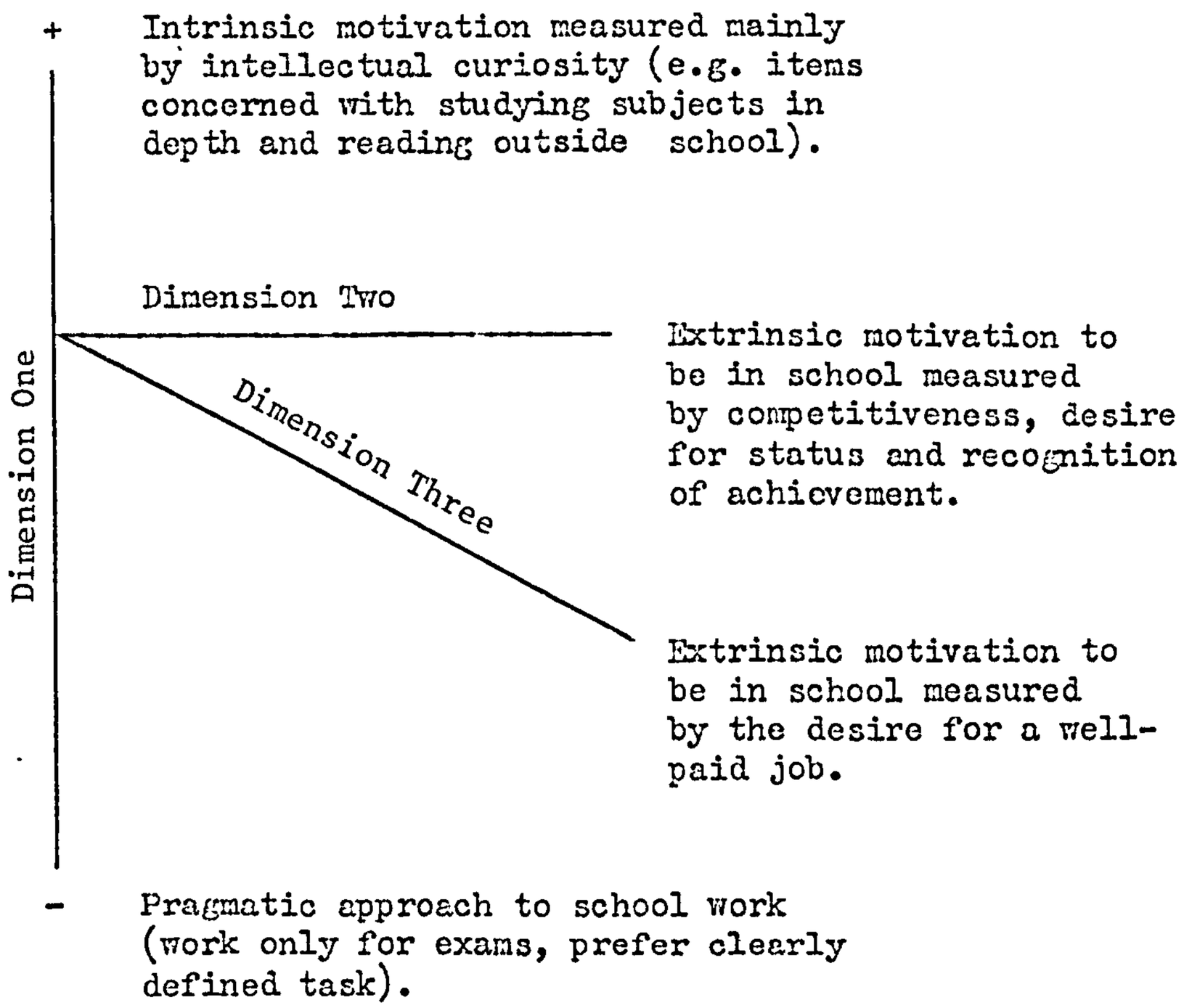
		M3	M14	M13	M19	M4	M5	M8	M20
M3	Good exam results are the most important outcome of one's academic career.	1.0							
M14	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	0.13	1.0						
M13	I like other people to recognise my achievements.	0.10	0.32	1.0					
M19	I enjoy working out the solution to a complicated problem.	0.20	0.23	0.20	1.0				
M4	I spend too long on certain topics because I get very interested and involved in them.	0.10	0.04	0.10	-0.01	1.0			
M5	I would very much like to have a job which will give me high status within the community.	0.01	0.20	0.14	0.10	0.05	1.0		
M8	I enjoy feeling that I can do things better than anybody else.	-0.10	0.14	0.20	0.13	-0.01	-0.10	1.0	
M20	I enjoy being part of an enthusiastic group of people working on a project.	-0.11	0.20	0.10	-0.04	-0.03	0.20	-0.01	1.0

Figure 19

BOYS GOING INTO FULL-TIME EMPLOYMENT: FACTOR TWO

Alpha co-efficient = 0.47

The main problem now is to decide whether one motivation model can be used for all groups. Such a model is necessary for two main reasons; firstly, it is the only way that groups too small for factor analysis (boys going to college of education, girls going into full-time employment and those who do not know what they want to do when they leave school) can be included; secondly, without a comprehensive model of motivation, it becomes extremely difficult to look at the other variables, e.g. social class, in relation to motivation. From the analyses that have been described, it does seem possible to construct a model which, although a compromise, can be used to represent all the groups. The model proposed is given in diagrammatic form below:



The items that will be used to measure each of these dimensions are given below.

Dimension One Intrinsic motivation

M4 I spend too long on certain topics because I get very interested and involved in them.

M10 I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.

M11 I would rather be left to discover things for myself than have everything told to me by the teacher.

M15 I like to read a lot of books covering widely differing subjects.

M19 I enjoy working out the solution to a complicated problem.

M20 I enjoy being part of an enthusiastic group of people working on a project.

M21 I read a lot outside my school subjects.

M24 I enjoy visiting museums, art galleries and exhibitions.

M25 I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.

M2(-) I prefer to be given a clearly defined task, preferably with any reading I have to do specified.

M6(-) I try to keep to set work and avoid following up interesting sidelines.

M9(-) I get disheartened and give up easily if something is too difficult for me.

M12(-) I usually study only when I am required to, in order to pass exams.

M16(-) Without the stimulus of exams I doubt whether I would do much studying.

Dimension Two Extrinsic motivation I

M1 I play any game to win, not just for the fun of it.

M3 Good exam results are the most important outcome of one's academic career.

M5 I would very much like to have a job which will give me high status within the community.

M8 I enjoy feeling I can do things better than anybody else.

M13 I like other people to recognise my achievements.

M14 I work best in a competitive situation, particularly if there is a good chance of coming out on top.

Dimension Three Extrinsic motivation II

M18 How much prestige a job had would be the most important factor in determining whether or not I would take it.

M17 If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.

M23 I sometimes wish I was out at work earning money rather than studying.

M26 How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.

Dimension One is the same as Factor I for boys going to university and polytechnic; this one was chosen because it has the most items on it. Item M25 ("I would think my education had been worthwhile even if I could not get the job I wanted when I had finished") is included on this dimension rather than on Dimension Two because it appeared on Factor I for three out of the four factor analyses. The odd one out was the analysis for girls going to university and polytechnic, when the item appeared on Factor E, negatively correlated with the other items. This dimension is appropriate for all groups, although not all the items are equally appropriate to all groups. All the items are

appropriate for the university-bound group, and most of them are appropriate for the girls going to college of education. Although only two of the intrinsic motivation items are appropriate for the boys going into full-time employment, all the items measuring the pragmatic approach to school are appropriate to this group. Their pragmatic approach to school will be reflected in a low score on this dimension, as the dimension is scored in the direction of high intrinsic motivation.

The division of extrinsic motivation into two separate dimensions is to accommodate the important role money plays for the boys going into full-time employment. Items measuring attitudes towards money had correlated with the other extrinsic items in the first three groups (university and polytechnic pupils and girls going to college of education), but for boys going into full-time employment they correlated with the pragmatic approach to school. The only way to accommodate these differences was to have the items concerned with money as a separate dimension. The item concerned with prestige was put into this dimension because, in three out of the four analyses, it correlated better with the items concerned with money than it did with those concerned with status, competition, etc. This dimension, however, is not orthogonal to the other two dimensions, as can be seen from Table 25.

Table 25 Inter-correlations between scores on the three dimensions

	Correlation	Significant level
All boys		
Dimension One with Two	-0.11	N.S.
Dimension One with Three	-0.31	$p < 0.001$
Dimension Two with Three	0.21	$p < 0.01$
All girls		
Dimension One with Two	-0.02	N.S.
Dimension One with Three	-0.17	$p < 0.01$
Dimension Two with Three	0.14	$p < 0.05$

Dimensions One and Two still remain orthogonal to one another: the score on one of these dimensions cannot be predicted from the other. This is not true of Dimension Three, where the score on both Dimensions One and Two can be used to predict the score on this dimension. A high score on Dimension One is associated with a low score on Dimension Three, and a high score on Dimension Two indicates a high score also on Dimension Three. Despite the fact that the above correlations are statistically significant, they are not particularly large and the power of prediction is not sufficiently good to warrant the exclusion of Dimension Three. This compromise solution obviously affects the reliability of the scales formed by using

the dimensions outlined, as some of the items are less relevant to certain sub-groups within the population. The alpha co-efficients for the three new scales are given in Table 26.

Table 26 Alpha co-efficients for the three scales

Scale	All boys	All girls
One	0.68	0.63
Two	0.51	0.47
Three	0.41	0.38

The first scale is still a very reliable measure, with alpha co-efficients of over 0.60. There are, however, problems with the other two scales. The lower alpha co-efficients appear not to be due to lower inter-correlations between the items than those in Scale One (see correlation matrices for main analysis, Figures 8 - 19) but to the shorter length of the scales. Scale Two contains six items and Scale Three four items, as opposed to the fourteen items making up Scale One. Length of scale is a contributing factor towards reliability, and this is reflected in the alpha co-efficient. The problem is whether the two scales mentioned above could in any meaningful way be made longer, thereby increasing their reliability. Obviously, they could be made longer by repeating the same questions in a slightly different way, and as these items would inter-correlate highly, the alpha co-efficient would be increased. However, one would not gain any additional information by increasing the scale in this way. This seems, to the author, to pin-point clearly

the dilemma of the researcher in designing scales: if the scale is long and repetitious then it will be reliable - according to the alpha co-efficient; if, however, redundancy is removed and all the questions are designed to elicit additional information, then the scale appears to be less reliable simply because it is shorter. Despite the lower alpha co-efficients obtained for Scales Two and Three, the use of the scales seems justified by the fact that items in them correlate as highly with one another as do the items in Scale One, and by the fact that if Scales Two and Three had been longer, the alpha co-efficients would have been higher.

From the factor analysis of the motivation questionnaire, therefore, three scales were constructed; thus each pupil had three separate motivation scores, all of which were considered in relation to the other variables in the project.

C H A P T E R 10

Analysis of the Social Class Questionnaire

Following the decision taken earlier, the social class questionnaires were analysed separately for the parents of boys and girls. The same method of factor analysis was used as for the motivation questionnaire, described in the previous chapter, except that no limit was placed on the number of factors for the first analysis, and it was not felt necessary to repeat the analysis specifying the number of factors. The factor solutions are given below:

Parents of boys

Factor One		Loadings
S5a	Father's occupation.	0.42
S2a	My father never had the opportunity to stay on at school.	0.71
S2b	My mother never had the opportunity to stay on at school.	0.64
S3a	My father, after leaving school, went to university, polytechnic or college.	-0.72
S3b	My mother, after leaving school, went to university, polytechnic or college.	-0.72

Factor Two		
P1	I should not argue with adults.	0.79
P3	I should try to "come out on top" and be better than anybody else.	0.53
P5	I should do what they (my parents) tell me because they know best.	0.77
P7	You can achieve anything you want provided you work hard enough.	0.48

		Loadings
Factor Three		
P2	I should make up my own mind about things.	0.80
P4	I should do what I thought was right irrespective of what other people say.	0.77
Factor Four		
S1a	My father does not particularly like the job he does.	0.59
S1b	My mother does not particularly like the job she does.	0.52
Factor Five		
S4a	My father wants me to have a better job than he has had.	0.72
S4b	My mother wants me to have a better job than she has had.	0.76
Factor Six		
P6	A good education is the only way of improving your standard of living.	0.67
P8	People in authority make rules for good reasons and therefore they should be obeyed and not questioned.	0.42
P9	People who do not take advantage of the opportunity to stay on at school are foolish.	0.81
Parents of girls		
Factor One		
S2a	My father never had the opportunity to stay on at school.	0.56
S2b	My mother never had the opportunity to stay on at school.	0.74
S3a	My father, after leaving school, went to university, polytechnic or college.	-0.67
S3b	My mother, after leaving school, went to university, polytechnic or college.	-0.77

Factor Two		Loadings
P1	I should not argue with adults.	0.60
P3	I should try to "come out on top" and be better than anybody else.	0.57
P5	I should do what they (my parents) tell me because they know best.	0.69
P6	A good education is the only way of improving your standard of living.	0.58
P7	You can achieve anything you want provided you work hard enough.	0.66
P8	People in authority make rules for good reasons and therefore they should be obeyed and not questioned.	0.53
P9	People who do not take advantage of the opportunity to stay on at school are foolish.	0.44
Factor Three		
P2	I should make up my own mind about things.	0.78
P4	I should do what I thought was right irrespective of what other people say.	0.67
Factor Four		
S4a	My father wants me to have a better job than he has had.	0.80
S4b	My mother wants me to have a better job than she has had.	0.79
Factor Five		
S1a	My father does not particularly like the job he has.	0.79
S1b	My mother does not particularly like the job she has.	0.66

When these items are plotted against the first two unrotated factors, two main factors emerge, one measuring authoritarianism and one measuring social class using father's occupation, parents' education and parents' attitudes towards their job. These two plots, with the correlation matrices for the items, are given below (Figures 20 - 25).

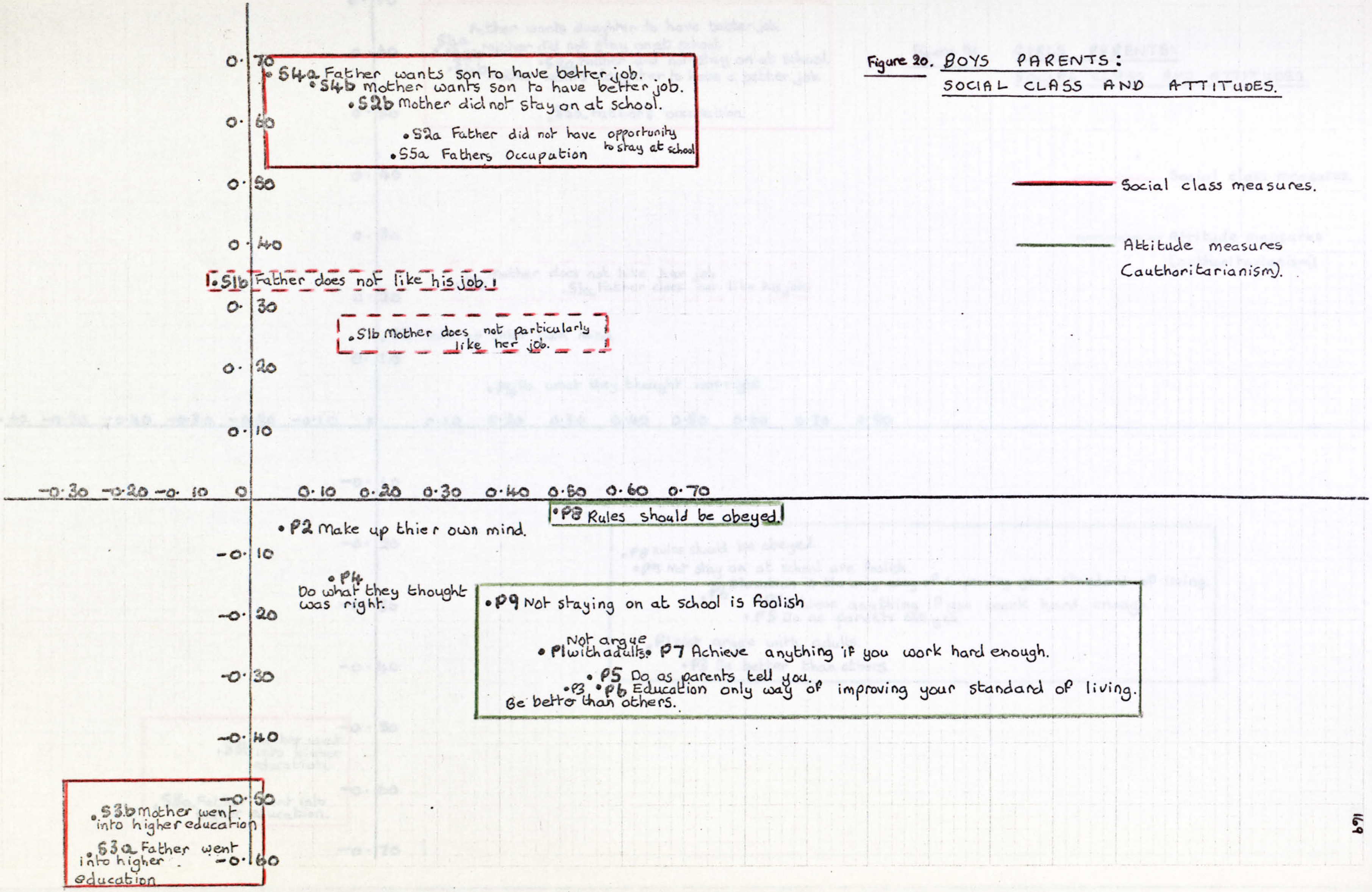
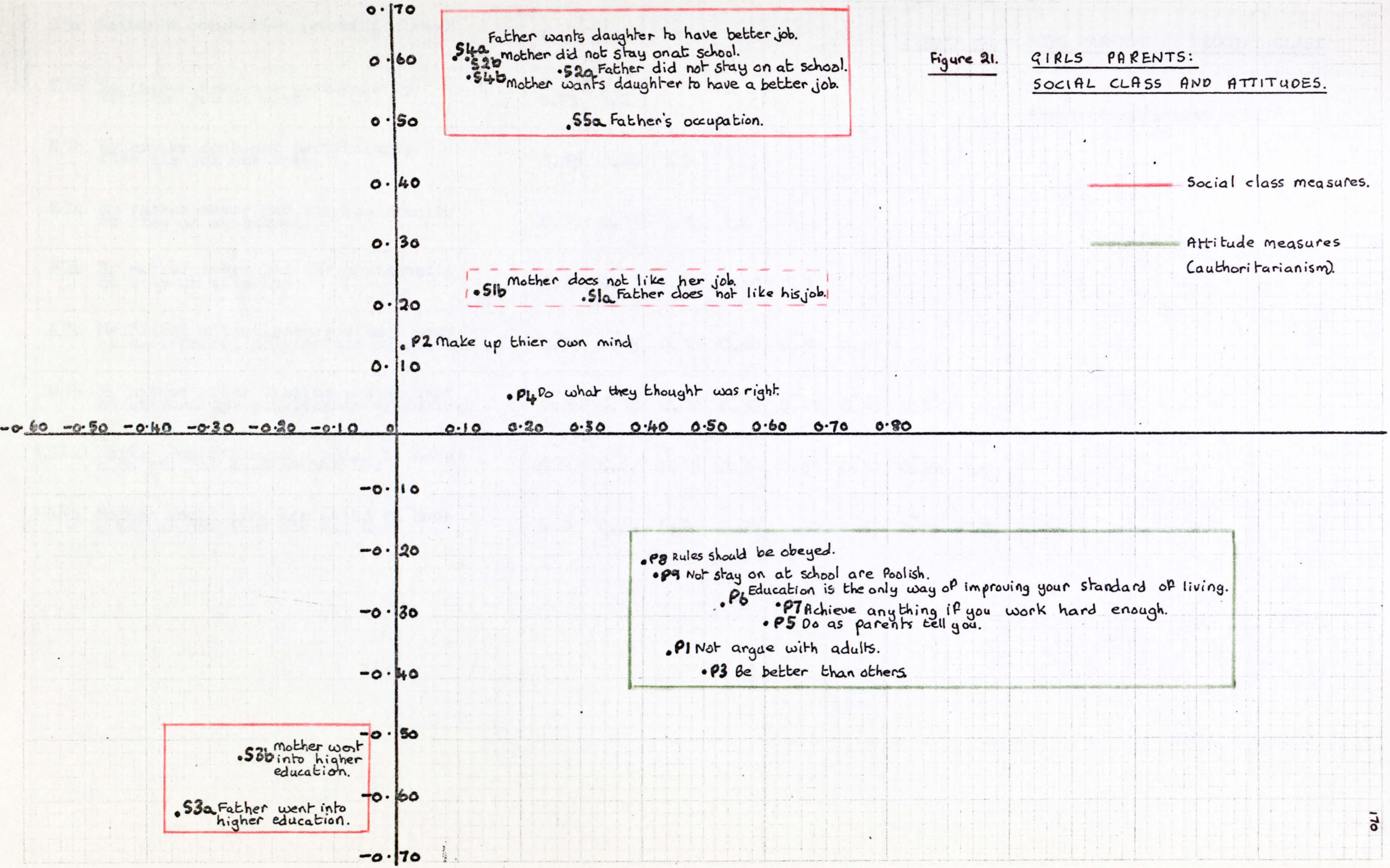


Figure 20. BOYS PARENTS: SOCIAL CLASS AND ATTITUDES.

Social class measures.

Attitude measures (Cauthoritarianism).

Figure 21. GIRLS PARENTS: SOCIAL CLASS AND ATTITUDES.



Social class measures.

Attitude measures (authoritarianism).

Figure 22 BOYS PARENTS : SOCIAL CLASS

Alpha co-efficient = 0.76

		S5a	S1a	S1b	S2a	S2b	S3a	S3b	S4a	S4b
S5a	Father's occupation (working class)	1.0								
S1a	My father does not particularly like the job he does	0.21	1.0							
S1b	My mother does not particularly like the job she does	0.15	0.20	1.0						
S2a	My father never had the opportunity to stay on at school	0.33	0.11	0.10	1.0					
S2b	My mother never had the opportunity to stay on at school	0.25	0.11	0.20	0.50	1.0				
S3a	My father after leaving school went to university, polytechnic or college	-0.33	-0.13	-0.10	-0.40	-0.30	1.0			
S3b	My mother after leaving school went to university, polytechnic or college	-0.26	-0.10	-0.10	-0.30	-0.41	-0.50	1.0		
S4a	Father would like his child to have a better job than he has had	0.30	0.22	0.13	0.30	0.31	-0.30	-0.20	1.0	
S4b	Mother would like her child to have a better job than she has had	0.29	0.20	0.20	0.25	0.40	-0.30	-0.21	0.73	1.0

Figure 23 BOYS PARENTS : AUTHORITARIANISM

Alpha co-efficient = 0.68

		P1	P3	P5	P6	P7	P8	P9
P1	I should not argue with adults.	1.0						
P3	I should try to 'come out on top' and be better than anybody else.	0.22	1.0					
P5	I should do what they (my parents) tell me because they know best.	0.44	0.30	1.0				
P6	A good education is the only way of improving your standard of living.	0.12	0.30	0.30	1.0			
P7	You can achieve anything you want provided you work hard enough.	0.23	0.30	0.30	0.33	1.0		
P8	People in authority make rules for good reasons and therefore they should be obeyed and not questioned.	0.14	0.16	0.12	0.20	0.34	1.0	
P9	People who do not take advantage of the opportunity to stay on at school are foolish.	0.10	0.11	0.13	0.32	0.13	0.15	1.0

Figure 24 GIRLS PARENTS : SOCIAL CLASS

Alpha co-efficient = 0.74

		S5a	S1a	S1b	S3a	S3b	S4a	S4b	S2a	S2b
S5a	Father's occupation (working class)	1.0								
S1a	My father does not particularly like the job he does.	0.20	1.0							
S1b	My mother does not particularly like the job she does.	0.00	0.21	1.0						
S3a	My father after leaving school went to university, polytechnic or college.	-0.36	-0.13	-0.12	1.0					
S3b	My mother after leaving school went to university, polytechnic or college.	-0.23	-0.05	-0.10	0.41	1.0				
S4a	Father would like his child to have a better job than he has had.	0.33	0.20	0.20	-0.30	-0.20	1.0			
S4b	Mother would like her child to have a better job than she has had.	0.21	0.10	0.20	-0.23	-0.25	0.60	1.0		
S2a	My father never had the opportunity to stay on at school.	0.30	0.21	0.10	-0.51	-0.24	0.30	0.20	1.0	
S2b	My mother never had the opportunity to stay on at school.	0.20	0.10	0.10	-0.33	-0.41	0.21	0.34	0.40	1.0

		P1	P3	P5	P6	P7	P8	P9
P1	I should not argue with adults.	1.0						
P3	I should try to 'come out on top' and be better than anybody else.	0.24	1.0					
P5	I should do what they (my parents) tell me because they know best.	0.41	0.33	1.0				
P6	A good education is the only way of improving your standard of living.	0.20	0.34	0.23	1.0			
P7	You can achieve anything you want provided you work hard enough.	0.25	0.30	0.34	0.30	1.0		
P8	People in authority make rules for good reasons therefore they should be obeyed not questioned.	0.30	0.10	0.23	0.11	0.30	1.0	
P9	People who do not take advantage of the opportunity to stay on at school are foolish.	0.10	0.25	0.20	0.30	0.21	0.13	1.0

Figure 25

GIRLS PARENTS : AUTHORITARIANISM

Alpha co-efficient = 0.70

Two items were excluded, P2 ("I should make up my own mind about things") and P4 ("I should do what I thought was right irrespective of what other people say"), because they did not correlate with any of the other items. This was somewhat surprising, because in the pilot study these two items correlated negatively with the other items in the authoritarianism scale. One can only assume either that they had no real meaning for this group of pupils, or that there is an ambiguity in the wording of the questions which allows more than one interpretation.

Both of the main factors that emerge have very good alpha co-efficients, showing a high degree of reliability. For authoritarianism the co-efficients were 0.68 for boys' parents and 0.70 for girls' parents; for social class the co-efficients were 0.76 for boys' parents and 0.74 for girls' parents. It is now clear that the correct decision is to leave the social-class measures in two separate scales rather than combining them into one scale, as was considered in the pilot study. The authoritarianism scale is orthogonal to the other measures of social class, the correlation between the two scales being -0.07 for boys' parents and -0.08 for girls' parents, neither of these being significant. The expected finding therefore, based on previous research, was not confirmed. For this particular sample of parents there is no relationship between being working class and authoritarian.

The next question that arises is whether it is desirable, despite the high inter-correlations and the high alpha co-efficients, to combine the three different elements (fathers' occupation, parents' education and parents' attitude towards jobs) in one scale to measure social class, or whether the factor solution should be followed more closely. Either of these

decisions could be justified by the analysis. It was decided in the further analysis to use both options by including the composite measure in one analysis and then repeating the analysis using the three separate measures. Mother's occupation was not used in the study because not all of the pupils' mothers worked, although quite a large proportion of them did. If mother's occupation were to be used in subsequent analyses, then those pupils whose mothers were housewives would have to be excluded from the sample. This would involve too great a loss of numbers. Both mother's education and mother's attitude towards jobs are taken into account because the scales formed to measure these two variables included both mother and father*. Thus the influence of each parent was not analysed separately; only their joint influence was used. It can be seen from the correlation matrix that mother's education and father's education were highly correlated, as were their attitudes towards jobs.

The pupils not only filled in the attitude questionnaire on behalf of their parents, but they were also asked about their own attitudes, using identical questions to those asked about their parents. Factor analysis of that attitude scale produced the same factor structure as for their parents. The correlation matrices for the pupils' attitudes are given below (Figures 26 - 27).

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* For a detailed description of how these scales were scored, see Appendix E.

Figure 26 BOYS : AUTHORITARIANISM

Alpha co-efficient = 0.66

		C1	C3	C5	C6	C7	C8	C9
C1	I should not argue with adults.	1.0						
C3	I should try to 'come out on top' and be better than anybody else.	0.22	1.0					
C5	I should do what they (my parents) tell me because they know best.	0.44	0.30	1.0				
C6	A good education is the only way of improving your standard of living.	0.12	0.30	0.30	1.0			
C7	You can achieve anything you want provided you work hard enough.	0.23	0.30	0.30	0.33	1.0		
C8	People in authority make rules for good reasons and therefore they should be obeyed and not questioned.	0.14	0.12	0.12	0.20	0.34	1.0	
C9	People who do not take advantage of the opportunity to stay on at school are foolish.	0.10	0.11	0.13	0.32	0.13	0.15	1.0

Figure 27 GIRLS : AUTHORITARIANISM

Alpha co-efficient = 0.70

		C1	C3	C5	C6	C7	C8	C9
C1	I should not argue with adults.	1.0						
C3	I should try to 'come out on top' and be better than anybody else.	0.24	1.0					
C5	I should do what they (my parents) tell me because they know best.	0.41	0.33	1.0				
C6	A good education is the only way of improving your standard of living.	0.20	0.34	0.23	1.0			
C7	You can achieve anything you want provided you work hard enough.	0.25	0.30	0.34	0.30	1.0		
C8	People in authority make rules for good reasons and therefore they should be obeyed and not questioned.	0.31	0.10	0.23	0.11	0.30	1.0	
C9	People who do not take advantage of the opportunity to stay on at school are foolish.	0.10	0.25	0.20	0.30	0.21	0.13	1.0

The attitudes ascribed to parents by their children and the children's own attitudes correlated quite highly (r = 0.46 for boys, 0.56 for girls). A breakdown is given in Table 27 below, for all the sample, of the correlations for each item. The item showing the least agreement between parents and children was the one concerned with whether or not the children should do as their parents tell them.

Table 27 Inter-correlations between parents and pupils attitudes

Items		Correlation co-efficients
P1/C1	I should not argue with adults	0.42
P3/C3	I should try to "come out on top" and be better than everybody else	0.53
P5/C5	I should do what they (my parents) tell me because they know best	0.21
P6/C6	A good education is the only way of improving your standard of living	0.50
P8/C8	People in authority make rules for good reasons and therefore they should be obeyed and not questioned	0.54
P9/C9	People who do not take advantage of the opportunity to stay on at school are foolish	0.45
P7/C7	You can achieve anything you want provided you work hard enough	0.50

The mean scores of the two groups show a slight difference: the mean score for parents was 21.80 and for pupils 16.63. Pupils see their parents as more authoritarian than themselves; although they hold very similar attitudes to their parents, pupils nevertheless believe that their parents' attitudes are slightly more extreme than their own. The results of this analysis would certainly indicate that this particular group of pupils had been strongly influenced by their parents' attitudes, as their own attitudes are close to those of their parents, though the relationship is far from a perfect one. Given the similarity between their own attitudes and those they ascribed to their parents, it might at first sight seem surprising that these pupils did not give parental influence as a reason for staying on in the sixth form. To question M22 ("Without pressure from my parents I don't think I would have stayed on at school"), 94.6% of the sample replied "false". Perhaps the explanation is that because the pupils have absorbed their parents' attitudes, there was little friction between them and their parents; both parents and children value education, and no particular pressure was needed from the parents to persuade the pupils to stay on. This explanation would certainly be compatible with the findings of Banks and Finlayson (1973), who say of the successful boys in their sample: "Another feature which emerged very clearly from the case studies was the extent to which successful boys appeared to have accepted parental standards and expectations." The relationship between attitudes, of both pupils and parents, and motivation will be discussed further when describing the final analysis.

C H A P T E R 11

The relationship between home background and motivation

The aim of the final analysis of the project is to see if there is a relationship between motivation and home background. The hypothesis under investigation is that academically successful children differ within the school situation, some being intrinsically motivated and some being extrinsically motivated, and that these differences are distinguishable and are linked to social class, particularly parental attitudes: middle-class children are more likely to be intrinsically motivated and working-class children extrinsically motivated. The results of the factor analysis show that intrinsic motivation can be distinguished from extrinsic motivation, but that pupils are not necessarily motivated exclusively by one or the other, but in many cases by both types. What we now want to know is: does the home background affect the way in which children are motivated?

To do this a multiple regression analysis was used. This method of analysis was chosen because home background is not measured by one variable only, but by several variables, and it is important to know the effect of each particular variable. Multiple regression is a general statistical technique through which one can analyse the relationship between a dependent or criterion variable, in this case motivation, and a set of independent or predictor variables, in this case measures of home background (Nie et al., 1975). This method of analysis allows one to calculate the beta co-efficients - that is, the unique contribution of each independent variable to the dependent variable. The effect that each independent variable has via

the other independent variables on the dependent variable is partialled out, and all the other independent variables are then held constant. The multiple r^2 gives a measure of the amount of variance explained by the combined effects, both direct and indirect, of all the independent variables (Bynner, 1972; Guilford and Fruchter, 1973). The use of this method of analysis in the social sciences has been well documented, for example Peaker (1967), Duncan (1966, 1970) and Duncan et al. (1972).

The first step in the analysis is to design the model which will determine both the independent variables that are to go into the analysis and the order in which they will enter the analysis. Multiple regression analysis can tell one statistically the extent to which variation in one variable can be explained by the variation in other variables; whether such an explanation is logically valid depends on the assumptions on which the model is built. The assumptions underlying the following model are based on previous research findings, a fact which allows one to take logical decisions about the hierarchical order of the independent variables. The variables to be included in the analysis are given below*.

The dependent variables

a) Intrinsic motivation

b) Extrinsic motivation I (status, competitiveness, etc.)

c) Extrinsic motivation II (money)

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* A detailed description of the scoring of all these variables is given in Appendix E.

The independent variables

Father's occupation

Parents' education

Parents' attitudes towards jobs

Parents' attitudes (authoritarianism)

Pupil's attitudes (authoritarianism)

Pupil's achievement

Father's occupation has been considered important because it pin-points a person's position within society; his occupation will mean that he will have"differential access to income, power and prestige, which appears to induce different life styles with different attitudes and values" (Swift, 1968). Level of education is also important, as this often determines occupation. What is being said, therefore, is that some social class variables, such as occupation, are indicators of attitudes and thus should come before attitudes in any hierarchical model. Thus the first variables in the model are the social class variables that affect attitudes - father's occupation and parents' education. Parents' attitudes towards their jobs were also included at this stage because parental dissatisfaction with their own jobs moulds their attitudes towards education, in the sense that they see it as highly desirable for their children (see the literature survey in Chapter 3 for references). Parental attitudes themselves form the next step in the model, and they are followed by pupil's attitudes.

The main problem now is to decide where pupil's achievement should come in the model. If a measure of ability had been obtained - such as I.Q. - then this would clearly have gone into the model at the same time as the social class variables

of occupation and education. However, because of the difficulties of obtaining such a measure, information was collected on achievement - based on 'O' and 'A' levels - and not on ability. It therefore cannot logically be included at the same stage as social class, because social class is seen as one of the determining factors in achievement (Swift, 1966). Two options therefore appear to be left, each with its advantages and disadvantages. It could be argued, and Hunt would certainly endorse this, that the motivation of the pupils caused their achievement and that achievement should therefore be the final variable in the model. This however poses a problem in that the measure of achievement was based partly on success before entering the sixth form ('O' levels), and this success may have influenced the pupils' decisions to go into the sixth form. As the research is concerned with reasons for going into the sixth form, this particular measure of achievement should not come after the motivation variables. The other option, to put achievement before motivation but after social class, therefore seems more acceptable.

The next question is, should pupil's achievement go into the analysis at the same time as parents' attitudes or as pupil's attitudes? Banks and Finlayson (1973) found that parents' perception of both their boy's progress at school and the boy's ability influenced their attitudes towards the boy. Lack of progress at school was often accompanied by a hostile home environment, and vice versa. Achievement may also have influenced the pupil's attitudes, both directly in the sense that success will give them favourable attitudes towards school, and indirectly via their parents' approval. Thus achievement can influence the

attitudes of both pupils and parents and one should therefore put achievement before attitudes. This argument is clearly not the only one that is logically valid; one could have argued, for example, that pupil's and parents' attitudes cause pupil's achievement. However, given the known interaction between pupil's achievement, the parents' perception of this and parental attitudes, the author felt that achievement should go in at the same level as parents' attitudes, but before pupil's attitudes. This decision clearly represents a personal preference, and there is certainly no completely water-tight case to be made for putting it in that position.

The final model is given below (Figure 28), the variables will enter the analysis at the level indicated.

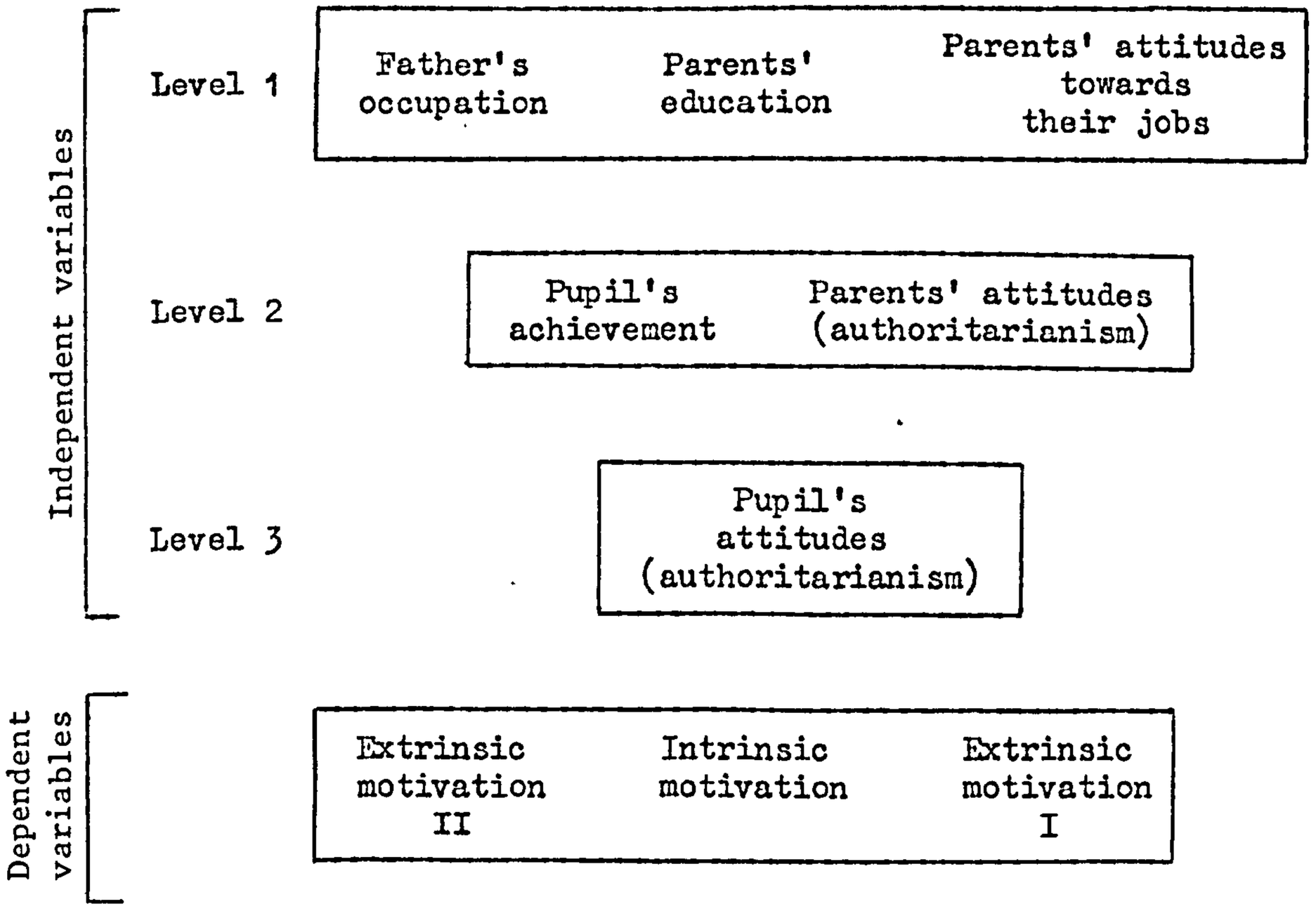


Figure 28 Order of variables for the regression analysis

Multiple regression analysis is based on Pearson's r, which uses the regression line to determine the correlation. The variables in the regression analysis therefore must have either no relationship with one another, i.e. be virtually uncorrelated or a linear relationship with one another. Scattergrams were computed for all possible combinations of pairs of variables in the regression analysis and inspected for non-linear relationships. All the variables fulfilled the criteria of either having significant linear relationships with other variables or no relationship at all.

Following previous practice in the project, separate analysis was done for each sex. The analysis was carried out using the steps outlined in Table 28.

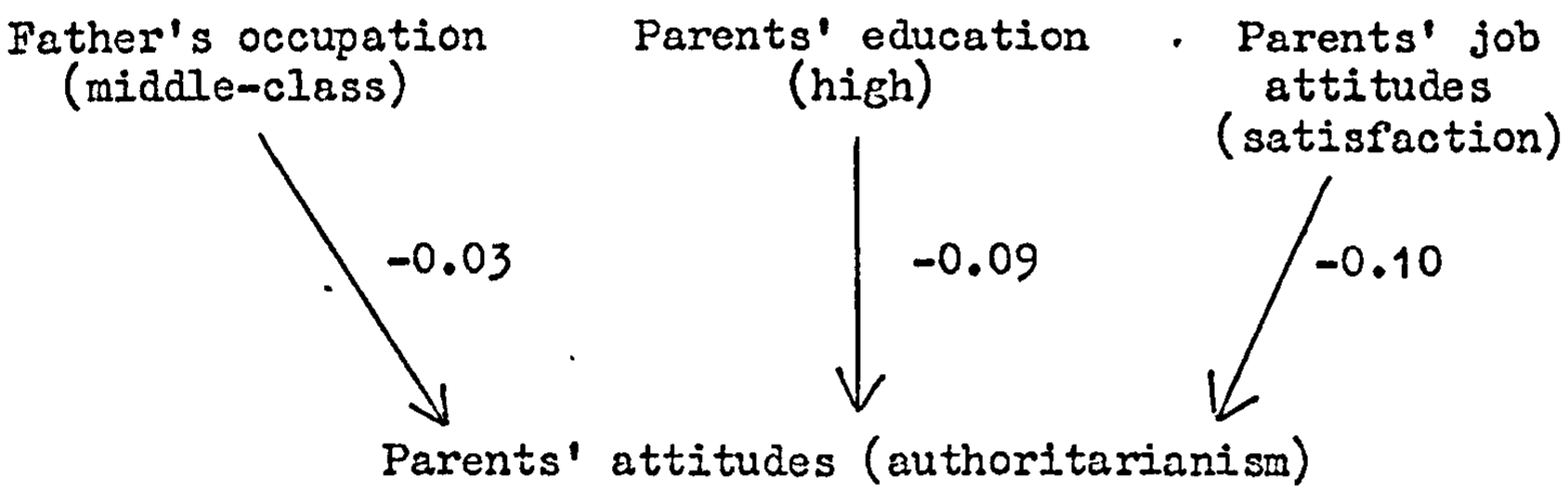
Table 28 Steps used in the regression analysis

Steps	Independent variables	Dependent variables
1a	Father's occupation Parents' education Parents' attitudes towards jobs	Parents' attitudes (authoritarianism)
1b	Father's occupation Parents' education Parents' attitudes towards jobs	Pupil's achievement
2	Father's occupation Parents' education Parents' attitudes towards jobs Parents' attitudes (authoritarianism) Pupil's achievement	Pupil's attitudes (authoritarianism)
3	Father's occupation Parents' education Parents' attitudes towards jobs Parents' attitudes (authoritarianism) Pupil's achievement Pupil's attitudes (authoritarianism)	each one separately: Intrinsic motivation; Extrinsic motivation I; Extrinsic motivation II

The results of each step of the analysis will be given in diagrammatic form with both the beta co-efficients and the percentage of the variance explained; where appropriate, this will be followed by a discussion of the results.

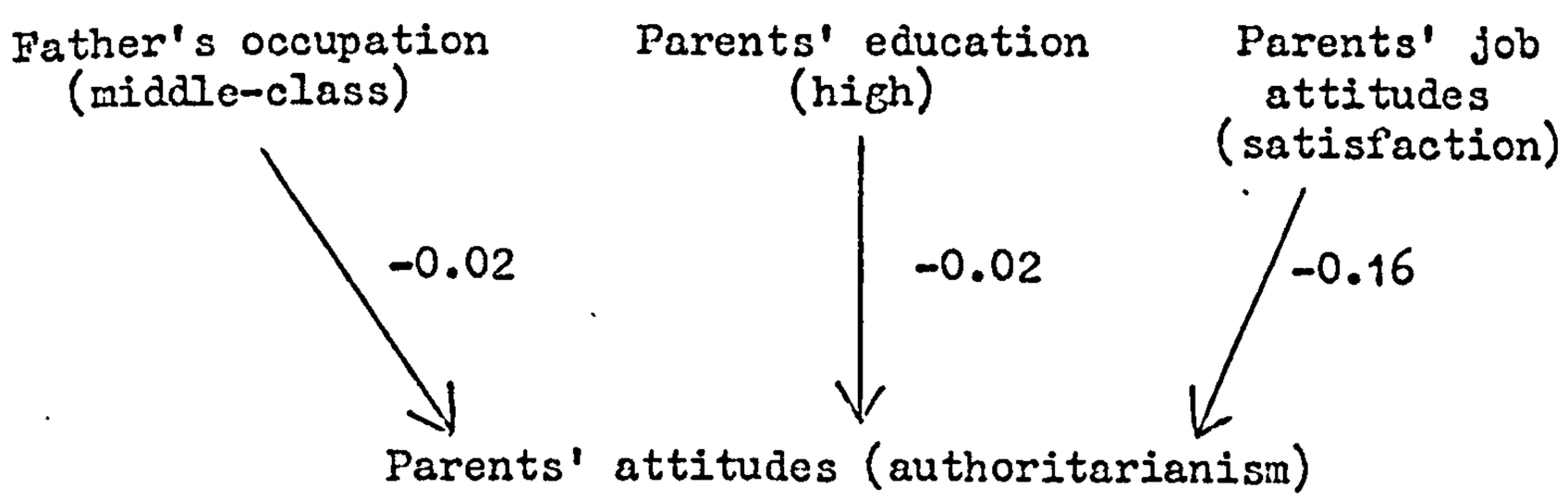
Step One (a)

Girls



2%

Boys



2%

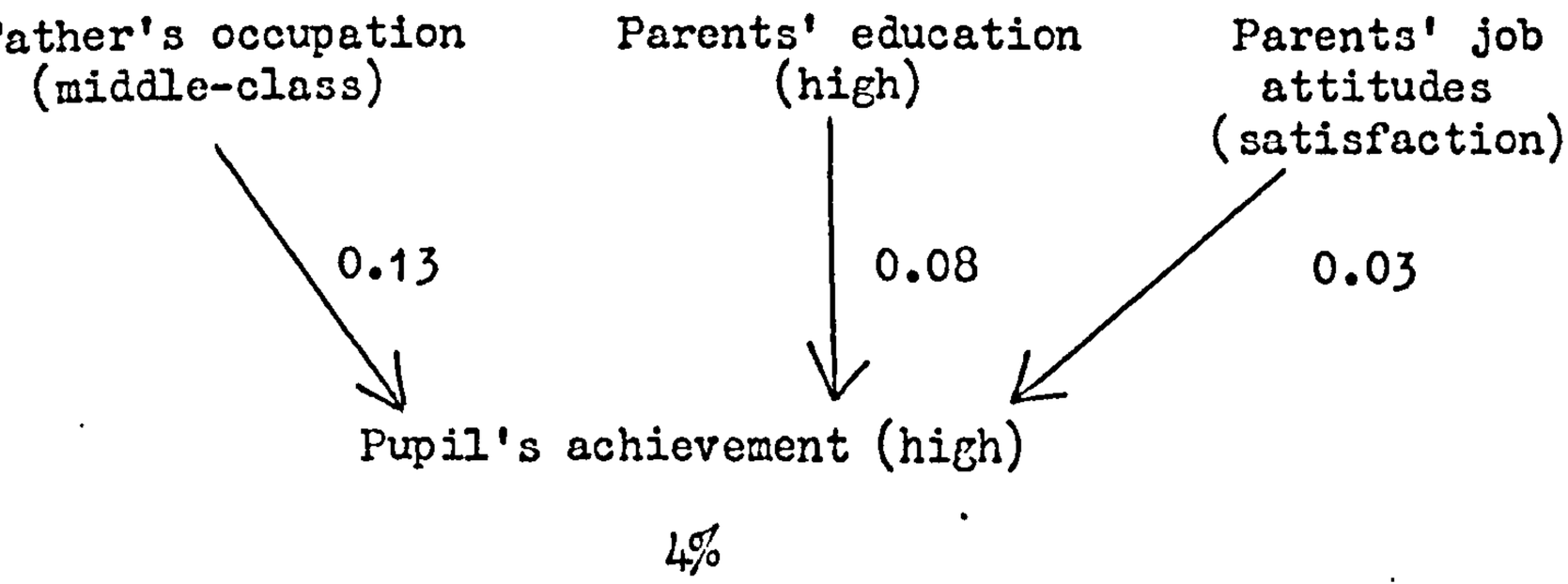
Only two of the beta co-efficients above reach significance: the relationship between parents' attitudes towards their jobs and authoritarianism is significant at the 5% level for girls and 1% level for boys. There is, therefore, in line with Swift's (1966) argument, a significant relationship between parents being dissatisfied with their jobs and being authoritarian

in that they believe in deference to authority and achievement via hard work. The relationship is stronger for the parents of boys than it is for those of girls. There is no relationship between authoritarianism and either father's occupation or parents' education, so the hypothesis that authoritarianism is more likely to be a characteristic of working-class parents, as measured by occupation or education, must be refuted for this particular sample. From the r^2 we can see that all the social class measures only account for 2% of variance in parents' attitudes, so despite the significant relationship discussed above, social class variables as a whole are very poor predictors of the attitudes of these sixth-formers' parents.

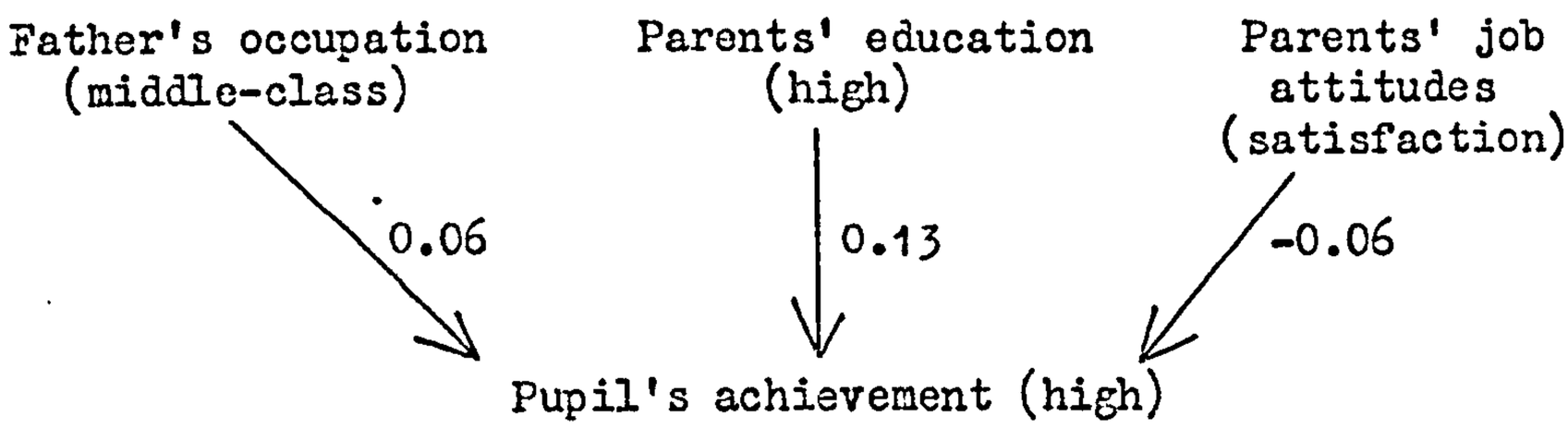
As a result of this analysis it was decided not to combine all three social class measures (father's occupation, parents' education and parents' job attitudes) to give one measure of social class, as using such a measure in the regression analysis would, in the light of the above findings, give a misleading picture.

Step One (b)

Girls



<u>Boys</u>

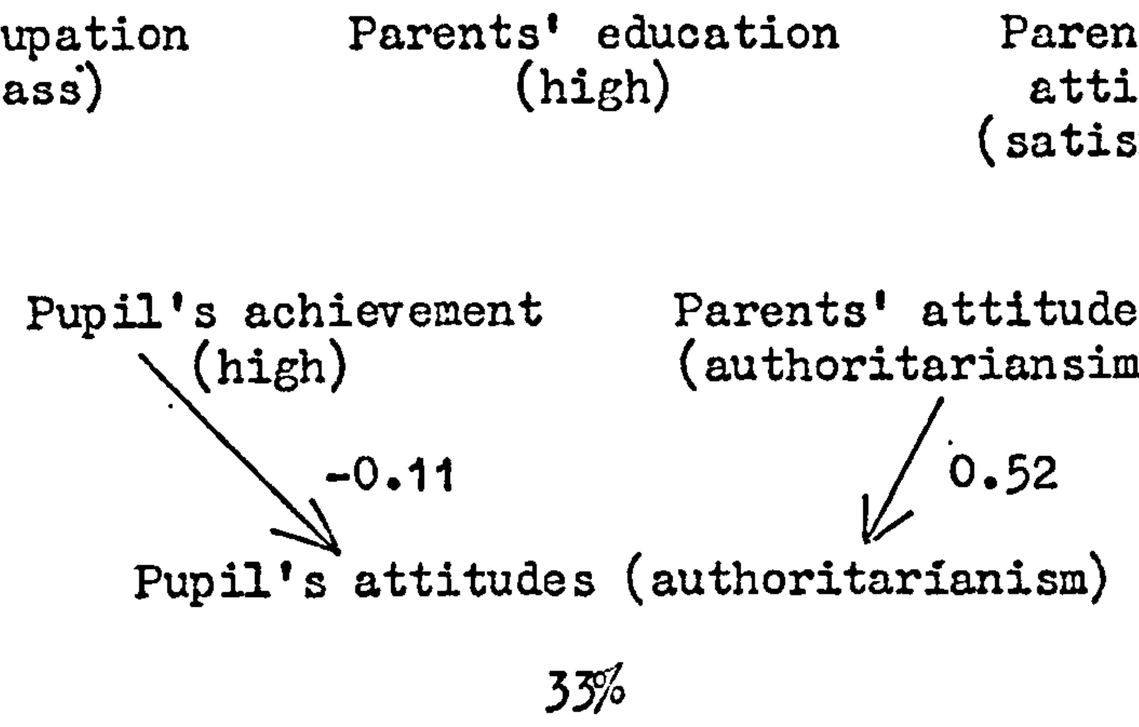


Two of the beta co-efficients are again significant, both at the 1% level. There is a significant relationship between father's occupation and pupil's achievement for girls, and between parents' education and pupil's achievement for boys. However, as in the previous analyses these significant relationships account for very little of the variance - 4% for girls and 2% for boys. From the above findings it would be reasonable to conclude that social class is not an important determinant of success at 'O' level, nor an influence on the number of 'A' levels that these pupils are taking. In other words, within this particular group of sixth-formers, achievement at 'O' level and number of 'A' levels being taken cannot be predicted with any substantial degree of accuracy from a knowledge of the pupil's social class background as measured by father's occupation or level of parents' education.

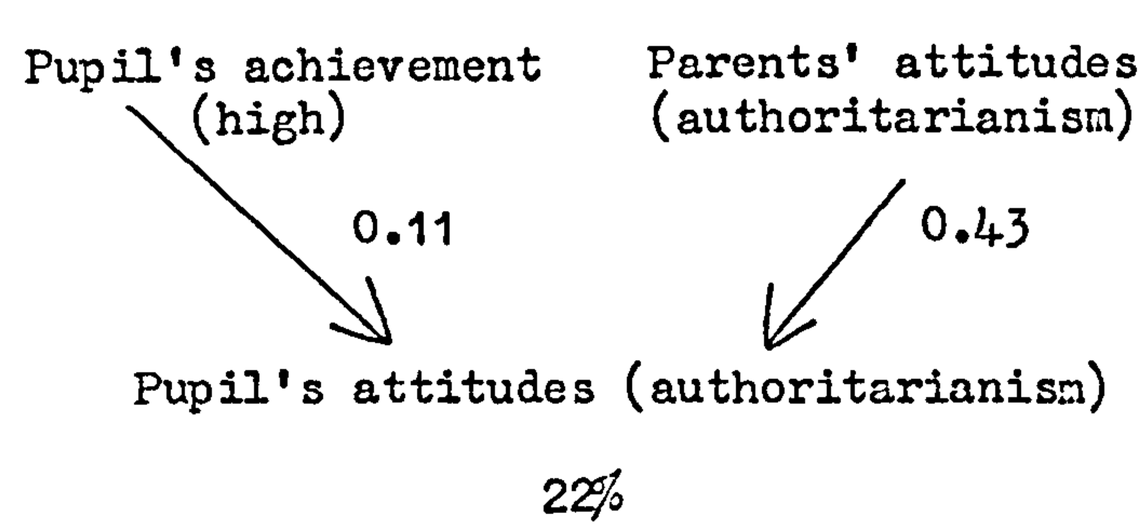
For the following analyses, only those beta co-efficients that reach the 1% level of significance will be included.

Step Two

Girls



Boys



The two significant beta co-efficients in these analyses are, in this instance, explaining a large proportion of the variance in pupil's attitudes - 33% for girls and 22% for boys. The variance, however, is explained largely by parents' attitudes, although there is some contribution from pupil's achievement. Although parents' attitudes do appear to play an important role in the formation of their children's attitudes, it is quite clear that there are other influences equally if not more important

in the formation of these sixth-formers' attitudes, indicated by the large amount of variance still left unexplained.

Step Three

All of the independent variables were regressed separately on each of the dependent motivation variables. The results of these three separate analyses have been combined in one diagram, Figure 29 for girls and Figure 30 for boys.

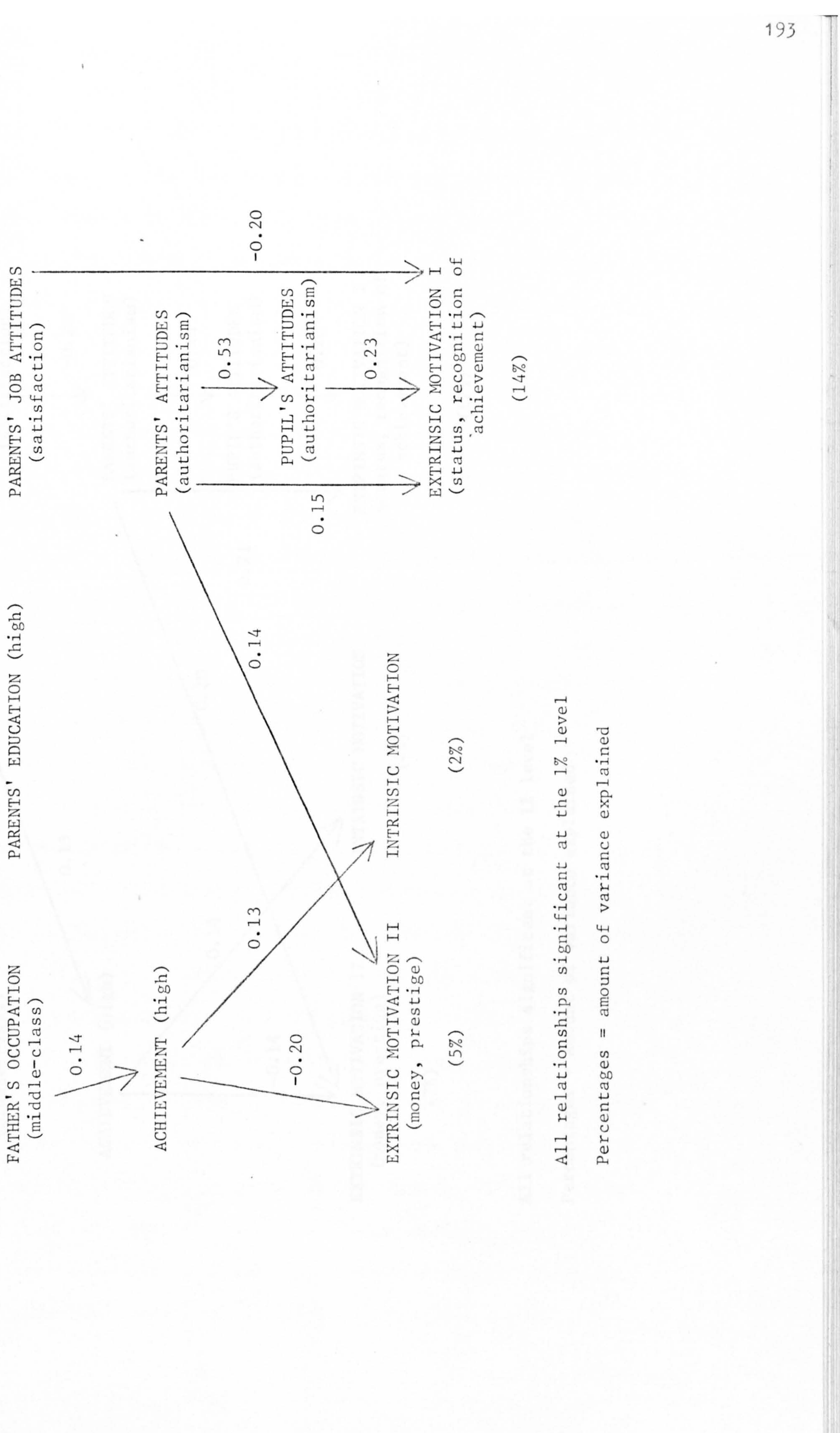
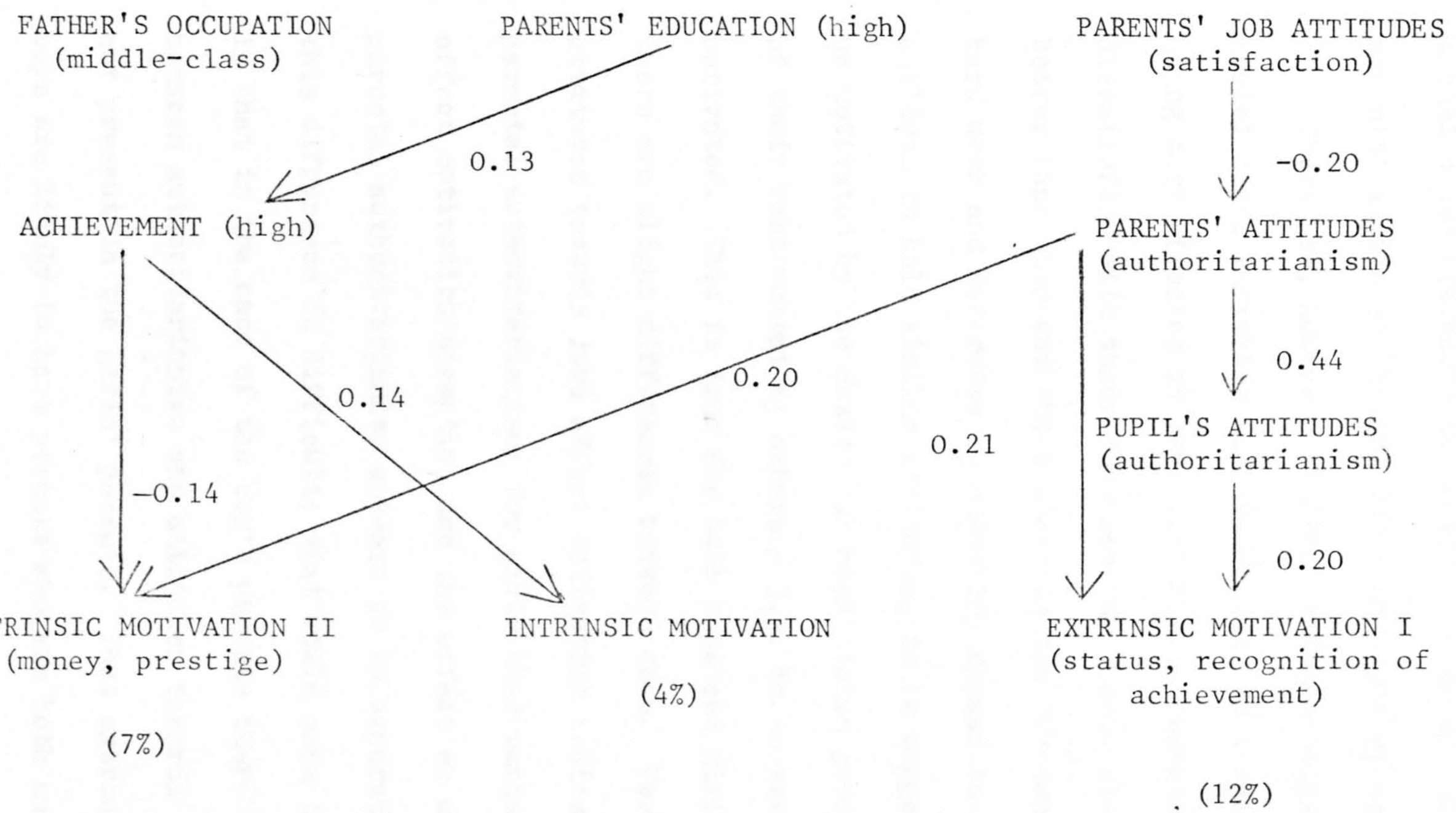


Figure 29. Regression Analysis for Girls

Figure 30. Regression Analysis for Boys



All relationships significant at the 1% level

Percentages = amount of variance explained

Although there are very slight differences in the analyses for boys and girls, the same overall pattern emerges. In both cases there is no direct link between any of the measures of social class (father's occupation, parents' education and parents' attitudes towards jobs) and type of motivation.

There are, however, indirect relationships between some social class variables and motivation, extrinsic motivation I being most affected by such variables. Parents who are dissatisfied with their jobs and want their children to do better than them and who believe in the "Protestant ethic" of hard work and deference to authority appear to influence their children to hold similar attitudes, to be competitive, and to be motivated by the desire for high status jobs and recognition of their achievement by others - i.e. to be extrinsically motivated. This is true for both boys and girls, although there are slight differences between them. For boys, parents' attitudes towards jobs affect motivation indirectly through parental authoritarianism; for girls this variable appears to affect motivation directly, and the effect on motivation of parental authoritarianism appears to be separate. How to interpret this difference is difficult; what would seem to be happening is that in the case of the boy's parents there is a relationship between authoritarianism and attitudes towards jobs which is not present in the girls' parents. Thus extrinsically motivated boys are likely to have parents who are both authoritarian and dissatisfied with their jobs. On the other hand, girls who are extrinsically motivated can have parents who are either authoritarian but not necessarily dissatisfied with their jobs, or parents who are dissatisfied with their jobs but not

necessarily authoritarian. However, in all cases the pupils themselves are likely to have authoritarian attitudes.

Parental attitudes are also related to the other type of extrinsic motivation - the desire for money. For both boys and girls there is a link between having authoritarian parents and being motivated by the desire for money. This type of motivation is also associated with low achievement in both sexes. The amount of variance explained by these relationships is, however, comparatively small - 5% in the case of girls and 7% in the case of boys.

Turning our attention to intrinsic motivation, we find a very different picture; this type of motivation remains largely unexplained by background factors. There is no relationship between this variable and any of the home background factors. In boys there is a relationship between pupil's attitudes and intrinsic motivation - rather a surprising relationship, in that it indicates that boys with authoritarian attitudes are likely to be intrinsically motivated. No such relationship is found for girls. For both sexes there is a relationship with achievement, high achievers being more likely to be intrinsically motivated. However, as these relationships explain so little of the variance (2% in girls, 4% in boys) it seems reasonable to conclude that intrinsic motivation is relatively independent of the background factors used in this analysis.

On the basis of these results there is no evidence to support the hypothesis that intrinsically motivated pupils are more likely to be middle-class.

The analysis to test the initial hypotheses has now been completed. However, as further information was available on

the pupils' aspirations for the future, it was decided to extend the analysis to see which, if any, of the variables in the model could predict what pupils were likely to do in the future. A final discussion of the results of the regression analysis is therefore postponed until after this further analysis has been described. There was some difficulty in extending the analysis because the relationships between aspirations and the other variables were not all linear, as can be seen from Table 29 given below. Non-linearity is particularly marked for girls.

Table 29. Mean scores on all variables by aspiration

	University		Polytechnic		College of Education		Full-time employment	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Father's occupation	2.57	2.38	2.95	2.65	2.78	2.92	3.16	2.86
Parents' education	2.59	2.35	3.20	2.89	2.90	2.97	3.16	2.81
Parents' attitudes towards their job	1.69	1.51	1.41	1.41	1.65	1.84	1.79	1.56
Pupil's achievement	10.66	10.92	8.45	6.89	6.70	7.10	5.91	5.98
Parental attitudes (authoritarianism)	16.41	17.13	16.41	14.41	16.51	16.47	15.55	17.15
Pupil's attitudes (authoritarianism)	21.90	22.94	22.08	21.44	21.60	21.01	20.98	21.68
Intrinsic motivation	18.42	20.21	16.70	17.34	14.81	17.28	14.18	17.12
Extrinsic motivation I	7.39	6.20	8.12	6.52	7.78	5.94	7.59	5.91
Extrinsic motivation II	1.99	1.60	2.29	2.72	3.02	2.32	3.24	2.51

The results of the analysis for linearity made necessary some alterations to the aspiration groups which had been originally formed for the factor analysis. For that analysis the pupils bound for polytechnic and university were grouped together, as were the pupils going to college of education and art, music or drama college. Using the information from the tables above, it was decided to include the pupils bound for art, music and drama college with the university-bound pupils, as this was the group they resembled most. Polytechnic-bound pupils were for the purpose of this analysis left as a separate group. It has become clear that the method of combining groups for the factor analysis was, with hindsight, not the best way of combining them; however, as the numbers of pupils in the two groups were extremely small (twenty-six boys and twenty-nine girls going to polytechnic, and nine boys and nine girls going to art, music or drama college), their inclusion in the "wrong" group could not have affected the factor analysis significantly. The groups for the present analysis are therefore as follows:*

Group One: Those who said they were going to university and art, music or drama college.

Group Two: Those who said they were going to polytechnic.

Group Three: Those who said they were going to college of education, technical college or agricultural college.

Group Four: Those who said they were going into full-time employment, apprenticeships, nursing or secretarial college. (N.B. Most of the pupils who said they were going into full-time employment also said they would be doing some form of further training - either apprenticeship, night school or day-release).

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* For a detailed description of how pupils were assigned to particular groups, see Chapter 5.

It was not possible to add aspirations as new dependent variables to the existing regression analysis because of the non-linear relationships between aspirations and the other variables. It was decided therefore to use a discriminant analysis.

This form of analysis allows one to distinguish statistically between two or more groups. To do this, one selects a collection of discriminating variables on which the groups might be expected to differ; the power of these variables to discriminate between groups is then assessed. Three statistical measures produced by this analysis are of importance for the present study: first, the actual percentage of cases correctly classified using the discriminating variables can be compared with chance; secondly, a discriminant function is obtained which gives a measure of how much each of the variables has contributed to the discrimination (their co-efficients can be interpreted in much the same way as the beta co-efficients in a multiple regression analysis); finally, Wilks' Lambda gives a measure of separation between groups - the smaller the Lambda the greater the separation. In interpreting the discriminant analysis it is necessary to take into account all of these measures; even then there are still some difficulties of interpretation which will be discussed when the results are given. The discriminating variables were introduced into the analysis using the step-wise procedure in the same order as for the regression analysis.

The first analysis showed, for both boys and girls, that achievement was the most important variable in correctly predicting aspirations; it contributed 0.74 and 0.73 respectively to the discriminant function. It was felt, however, that this might be a distortion of the model, as achievement acts as a

pre-requisite for certain choices. There is, for example, little point in applying for university if you are unlikely to fulfil the basic requirements in terms of 'O' and 'A' levels. It is therefore much more interesting to ask the following questions.

1. Of those pupils who are likely to fulfil the basic requirements for university entrance, is it possible to predict whether or not they will go to university by using variables other than achievement?

2. Conversely, are pupils who are going straight into full-time employment doing so only because they have not achieved enough 'O' and 'A' levels to go into higher education, or are they motivated by other considerations - such as a desire for money?

It was therefore decided to hold achievement constant and repeat the discriminant analysis. In the process of doing this, it was discovered that there is a complex interaction between intrinsic motivation, achievement and aspirations which is particularly marked for boys, as can be seen from the graphs given below (Figures 31 and 32).

Figure 31. BOYS: INTRINSIC MOTIVATION BY ASPIRATION AND ACHIEVEMENT.

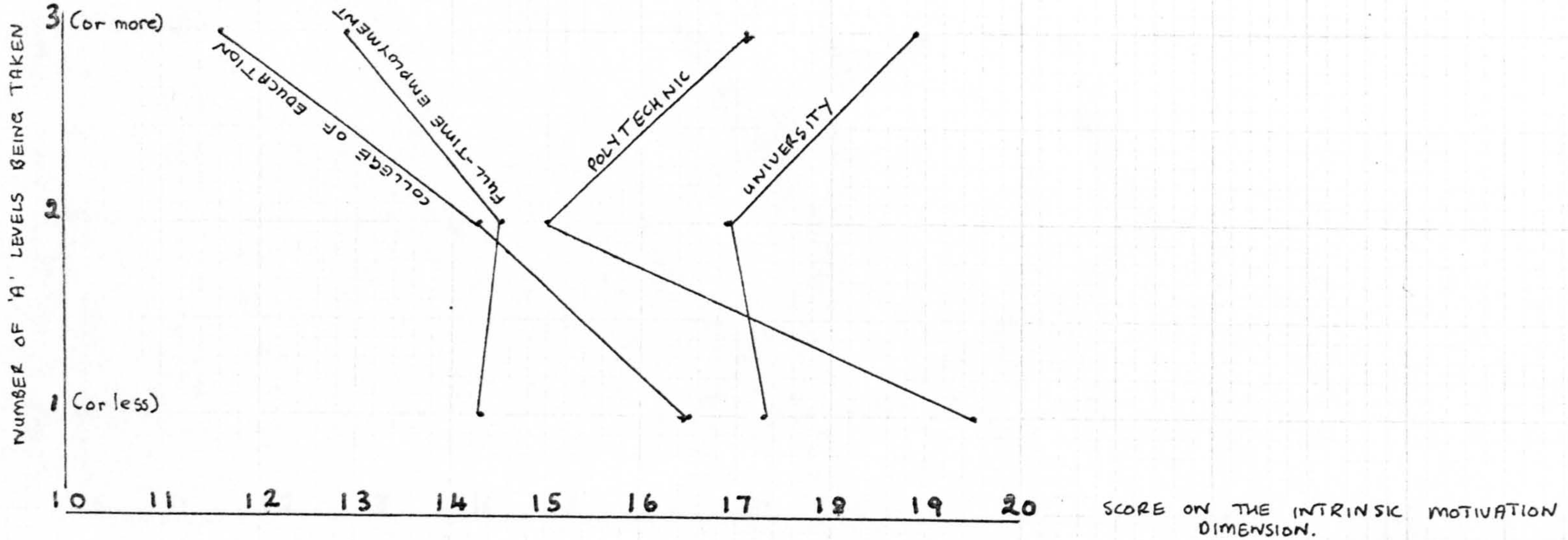
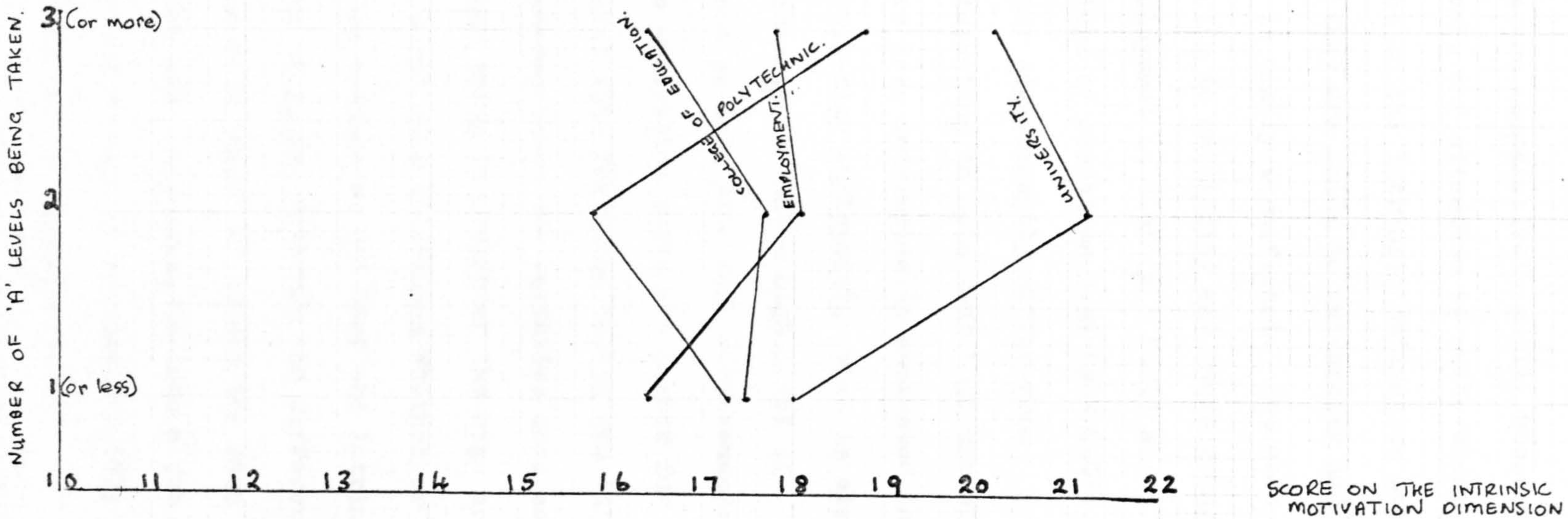


Figure 32. GIRLS: INTRINSIC MOTIVATION BY ASPIRATION AND ACHLEVEMENT.

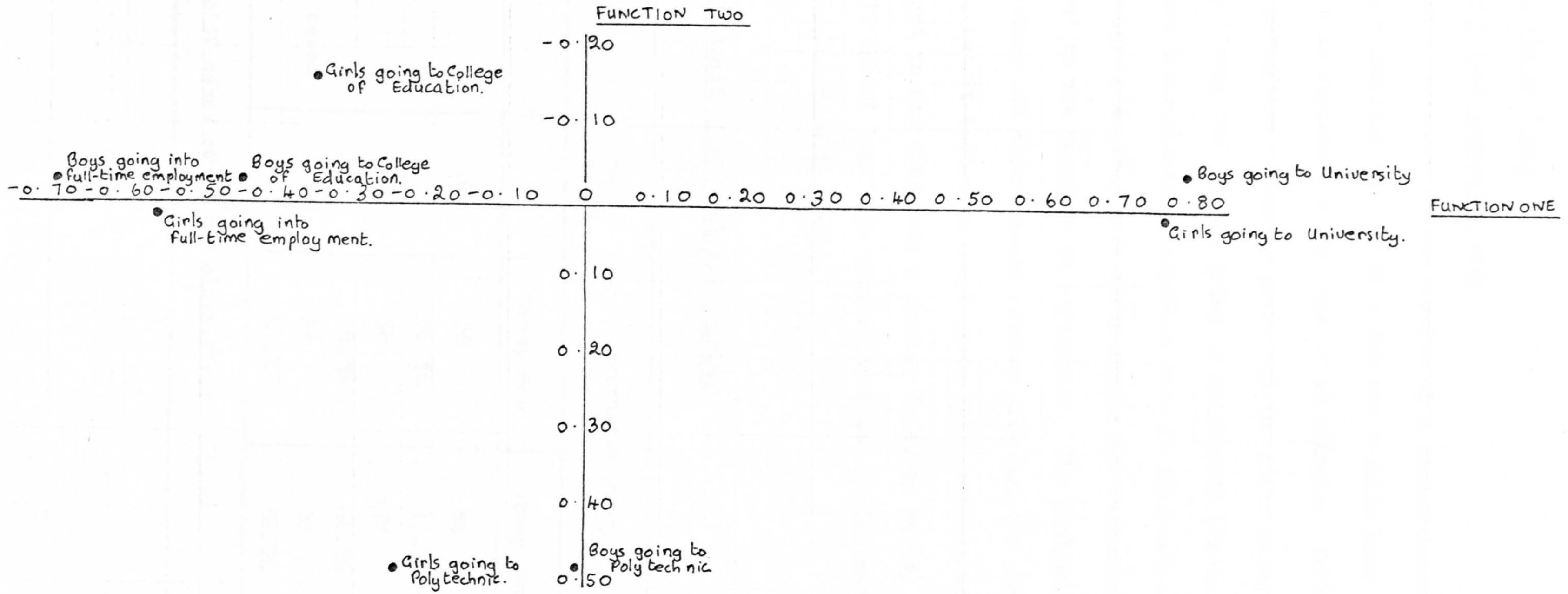


For the boys who have two or less 'A' levels the situation is not clear, as their numbers are comparatively small; however, for boys with three 'A' levels the situation is quite clear. The difference in the scores on the intrinsic motivation scale between those boys who say they are going to university and those who say they are not is highly significant. The mean difference between those going to university and those going straight into full-time employment is 8.85 ($p < 0.01$) and between university and college of education 7.21 ($p < 0.01$). Polytechnic-bound boys do not significantly differ from university boys. It is interesting to note that boys who opt for college of education are less intrinsically motivated than those going directly into full-time employment. What is also surprising about the relationship is that a high level of intrinsic motivation does not go only with high achievement: the scores on the intrinsic motivation scale are higher for boys taking only one 'A' level than for those taking two 'A' levels. The interaction between these two variables does seem to be rather complex, but one thing is clear: of the high achievement group (three 'A' levels or more) what determines whether or not they will go to university is whether or not they are intrinsically motivated. The same is true of girls, although the differences are not so extreme (of those with three 'A' levels the mean difference between university and going straight into a job is 2.35 and between university and college of education 3.68); these differences, however, are still significant.

It was decided to repeat the discriminant analysis, this time with an additional final step using a product variable to take into account the interaction between achievement and

intrinsic motivation. The same four groups were used. The results of this analysis show that the ability to predict the university-bound group is good but that discrimination between the other groups is poor. In order to explore the data more thoroughly and, hopefully, improve the discrimination between the non-university groups, it was decided to divide the analysis into stages; firstly to see if it were possible to discriminate university from non-university pupils; and secondly to see if one could discriminate better among non-university pupils after university pupils had been removed. Figure 33, which shows the groups plotted against the two main discriminant functions, does seem to suggest that this might prove more fruitful. Function one appears to discriminate between potential university students and those who are going into a job or to college of education, while function two appears to distinguish potential polytechnic students from the rest.

Figure 33 DISCRIMINANT FUNCTION (all four groups)



Results of the Analyses

University versus non-university

The interpretation of the results of a discriminant analysis are complex; the way in which the results have been interpreted is explained by the use of an example. Table 30 shows the percentage correctly predicted for girls going to university (Group One) or not going to university (Group Two) when all the discriminating variables were in the analysis. The fifty ungrouped cases were those pupils who responded "don't know" to the question on aspiration. The analysis does not attempt to discriminate between them and the other two groups, but it indicates which group they probably would have belonged to had they made a choice; in other words, 44% of the "don't knows" look like university-bound pupils and 56% look like non-university pupils.

Table 30 Discriminant analysis (girls)

	No of cases	Predicted group membership	
		Group One	Group Two
Group 1	102	88 86.3%	14 13.7%
Group 2	190	58 30.5%	132 69.5%
Ungrouped cases	50	22 44.0%	28 56.0%
Percentage of cases correctly classified: 75.34%			

In interpreting the results it was decided to use the percentage correctly predicted for each group. Thus the best model for predicting is that which maximises the percentage correctly predicted in both cases. In the above case the discriminant function can predict accurately 86% of the pupils who say they are going to university and 69.5% of those who say they are not going to university, giving an overall correct prediction of 75.3%. In this particular analysis using social class, parental and pupil attitudes and achievement had allowed a better prediction of Group One (90% correct), but a worse prediction of Group Two (67%), although the overall prediction was the same (75.3%). The Lambda indicated that including the motivation variables did increase the power of prediction, as it was lower when they were included (0.6686 as opposed to 0.7197). It therefore seems that the final analysis gives more reliable results.

The results of the analyses will all be given in the following way: first, a table giving the number correctly predicted for each group, the overall percentage correctly predicted, and the Wilks' Lambda; secondly, another table setting out the discriminant function, which gives the amount each of the variables has contributed to the discrimination in the final step of the analyses i.e. when all the variables were included.

Table 31 Discriminant analysis. Girls: university versus non-university

Variables in the analysis	Percentage correctly predicted			Wilks' Lambda
	Group One (university)	Group Two (non-university)	Overall	
1. Father's occupation, parents' education, parents' job attitudes	55	64	59	0.9526
2. All of the above variables plus pupil's achievement and parental attitudes (authoritarianism)	88	67	75	0.7294
3. All of the above variables plus pupil's attitudes (authoritarianism)	90	67	75	0.7197
4. All of the above variables plus all the motivation variables	86	67	75	0.6686
5. All of the above variables plus the product variable (achievement × intrinsic motivation)	85	72	78	0.6630

Table 32 Discriminant function. Girls: university versus non-university

Variables	With the product variable	Without the product variable
Father's occupation	0.10	0.13
Parents' education	0.13	0.20
Parents' job attitudes	0.04	0.06
Achievement	0.25	0.70
Parents' attitudes (authoritarianism)	0.20	0.14
Pupil's attitudes (authoritarianism)	0.25	0.33
Intrinsic motivation	0.05	0.33
Extrinsic motivation I (status, etc.)	0.15	0.20
Extrinsic motivation II (money, etc.)	0.12	0.11
Product variable	0.61	-

Table 33 Discriminant analysis. Boys: university versus non-university

Variables in the analysis	Percentage correctly predicted			Wilks' Lambda
	Group One (university)	Group Two (non-university).	Overall	
1. Father's occupation, parents' education, parents' job attitudes	50	62	56	0.9451
2. All of the above variables plus pupil's achievement and parental attitudes (authoritarianism)	86	69	77	0.6858
3. All of the above variables plus pupil's attitudes (authoritarianism)	86	68	77	0.6847
4. All of the above variables plus all the motivation variables	83	74	78	0.6145
5. All of the above variables plus the product variable (achievement × intrinsic motivation)	81	81	81	0.5940

Table 34 Discriminant function. Boys: university versus non-university

Variables	
Father's occupation	0.20
Parents' education	0.20
Parents' job attitudes	0.20
Achievement	0.05
Parents' attitudes (authoritarianism)	0.10
Pupil's attitudes (authoritarianism)	0.02
Intrinsic motivation	0.16
Extrinsic motivation I (status, etc.)	0.02
Extrinsic motivation II (money, etc.)	0.05
Product variable	0.98

In line with the results of the regression analysis, it can be seen from the above tables that social-class variables (father's occupation, parents' education, parents' attitudes towards jobs) are very poor predictors of pupil's aspirations: their power of prediction is little better than chance (50%) - 59% in the case of girls and 56% in the case of boys. The addition of the achievement variable greatly increases the ability to predict future aspiration. However, as the Lambda values indicate, adding attitudinal variables and the motivation variables further increases the power of prediction. There are however differences between boys and girls. For boys, the two biggest decreases in the Lambda values occur between the social-class variables and achievement (0.9451 to 0.6859), and between all of the rest of the variables and the motivation variables (0.6847 to 0.6145); adding the product variable also lowers the Lambda, but not so dramatically (0.6145 to 0.5950). The same pattern appears for girls, except that the Lambda is only slightly lowered by the addition of the product variable (0.6686 to 0.6630).

As would be expected from the results given earlier, the one variable which does most of the predicting for boys is the product variable made up of achievement and intrinsic motivation; all of the other variables account for very little. This variable has a beta co-efficient of 0.63*.

For the girls the situation is slightly different. The product variable does not so clearly account for all of the discrimination: where it is used, there is still some contribution

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*These beta co-efficients are calculated from a special form of regression analysis using canonical correlations (Cooley and Lohnes, 1971). The author is once again indebted to Dr Peter Coxhead for drawing attention to this method of producing beta co-efficients.

from pupil's attitudes (0.61 from the product variable, 0.25 from pupil's attitudes, beta co-efficients of 0.36 and 0.15 respectively). If we do not include the product variable in the discriminant analysis, then three variables are responsible for the prediction of aspirations: achievement (0.70 beta co-efficient of 0.38), intrinsic motivation (0.33 beta co-efficient of 0.20) and pupil's attitudes (0.33 beta co-efficient of 0.20). So it would seem that for girls the interaction between achievement and intrinsic motivation is not so crucial; these two variables are just as important separately. For girls, unlike boys, attitudes towards authority seem to be important in discriminating between groups. From the mean differences between the two groups on this variable, one can see that girls who are going to university are significantly less authoritarian than girls who are not going to university ($z = 3.3$, $p < 0.01$). In fact this non-authoritarianism in girls might be a pale reflection of conformity or non-conformity to the traditional female role, and if one had a measure of that, it might prove an even stronger predictor of whether or not they will go to university.

In conclusion, it would be fair to say that using the product variable of achievement and intrinsic motivation for boys, and the variables of achievement, intrinsic motivation and pupil's attitudes for girls, predicts with a considerable degree of success whether or not they will go to university.

If achievement is held constant, then slightly different factors come into play. Of those pupils who potentially have the qualifications necessary for university (i.e. are taking three 'A' levels), what discriminates between those who are going to university and those who are

not is mainly intrinsic motivation. Boys who are going to university are significantly more intrinsically motivated than those who are not ($z = 5.46$, $p < 0.01$); they also have parents with a higher level of education ($z = 3.84$, $p < 0.01$). Boys who choose not to go to university score significantly higher ($z = 3.47$, $p < 0.01$) on extrinsic motivation II (money) than do those who are going to university. None of the other variables are important, as can be seen from the discriminant function below:

Table 35 Discriminant function. Boys taking three 'A' levels university versus non-university

Variables	
Father's occupation	0.02
Parents' education	0.53
Parents' attitudes towards their jobs	0.18
Parents' attitudes (authoritarianism)	0.27
Pupil's attitudes (authoritarianism)	0.05
Intrinsic motivation	0.68
Extrinsic motivation I	0.05
Extrinsic motivation II	0.34

The percentage of pupils correctly classified was 76% over-all (76% in each case).

For girls the situation is slightly different, as can be seen from the discriminant function given below:

Table 36 Discriminant function. Girls taking three 'A' levels - university versus non-university

Variables	
Father's occupation	0.20
Parents' education	0.17
Parents' attitudes towards their jobs	0.35
Parents' attitudes (authoritarianism)	0.33
Pupil's attitudes (authoritarianism)	0.52
Intrinsic motivation	0.75
Extrinsic motivation I	0.14
Extrinsic motivation II	0.28

The percentage of pupils correctly classified is lower for girls than for boys (67% over-all, 65% of university pupils and 69% of non-university pupils). Although many of the variables above contribute towards the discrimination, the mean differences between the two groups do not reach significance except for intrinsic motivation ($z = 3.37$, $p < 0.01$) and pupils' attitudes ($z = 3.3$, $p < 0.01$). So for girls intrinsic motivation and non-authoritarianism would seem to be the most important discriminators: of the girls who are potentially qualified to go to university, how intrinsically motivated they are and how non-authoritarian they are will determine whether or not they will go.

It is interesting to note that for boys, this is the only area where a social-class variable (parents' education)plays any significant role. It could well be that for this minority of high-achieving boys, the fact that their parents did not go into higher education tends to work against their doing so themselves. Jackson and Marsden(1962) discovered that some parents consider education a waste of time if it is not going to lead to increased monetary benefits, and put pressure on their children to get out and earn money. Beliefs of this nature could be reinforced by today's economic climate with its graduate unemployment and could well be operating in this instance. This hypothesis is further supported by the fact that the boys who are not going to university are significantly more concerned about money than the boys who are going to university.

Attention can now be turned to the second question posed on page 205: once university-bound pupils have been removed, can one predict with greater accuracy where the remaining pupils will go?

Results of the analysis

Polytechnic versus college of education versus full-time employment

Table 37 Discriminant analysis. Girls going to polytechnic college of education or into full-time employment

Variables in the analysis	Percentage correctly predicted				Wilks' Lambda
	Poly-technic	College of educa-tion	Full-time employ-ment	Over-all	
1. Father's occupation, parents' education, parents' attitudes towards jobs	38	67	22	48	0.9592
2. All the above variables plus pupil's achievement and parental attitudes (authoritarianism)	55	48	47	49	0.8935
3. All the above variables plus pupil's attitudes (authoritarianism)	55	50	52	51	0.8929
4. All of the above variables plus all the motivation variables	59	52	50	52	0.8575
5. All of the above variables plus the product variable (achievement × intrinsic motivation)	59	53	45	51	0.8538

Table 38 Discriminant function. Girls going to polytechnic, college of education or full-time employment

Variables	With the product variable	Without the product variable
Father's occupation	0.02	0.02
Parents' education	0.10	0.10
Parents' job attitudes	0.72	0.72
Achievement	0.43	0.20
Parents' attitudes (authoritarianism)	0.78	0.81
Pupil's attitudes (authoritarianism)	0.66	0.68
Intrinsic motivation	0.00	0.16
Extrinsic motivation I	0.27	0.26
Extrinsic motivation II	0.21	0.20
Product variable	0.33	-

Table 39 Discriminant analysis. Boys going to polytechnic college of education of full-time employment

Variables in the analysis	Percentage correctly predicted				Wilks' Lambda
	Poly-technic	College of educa-tion	Full-time employ-ment	Over-all	
1. Father's occupation, parents' education, parents' attitudes towards their jobs	31	34	44	39	0.9547
2. All of the above variables plus pupil's achievement and parental attitudes (authoritarianism)	58	29	44	43	0.8981
3. All of the above variables plus pupil's attitudes (authoritarianism)	50	29	45	42	0.8968
4. All of the above variables plus all the motivation variables	62	36	53	51	0.8338
5. All of the above variables plus the product variable (achievement × intrinsic motivation)	65	41	53	52	0.8211

Table 40 Discriminant function. Boys going to polytechnic, college of education or into full-time employment

Variables	
Father's occupation	0.01
Parents' education	0.20
Parents' job attitudes	0.41
Achievement	0.19
Parents' attitudes (authoritarianism)	0.01
Pupil's attitudes (authoritarianism)	0.20
Intrinsic motivation	0.21
Extrinsic motivation I	0.43
Extrinsic motivation II	0.22
Product variable	0.46

The results of the above analysis must be treated with caution, as some of the groups are small and the discriminant function only just reaches significance; the reliability of the function is therefore slightly suspect. The results of this analysis are not as easy to interpret as those for the analysis involving university students; what is clear, however, is that different variables are operating in the prediction process now that university students are excluded. The prediction of polytechnic students is reasonably good in the case of boys (65% are predicted correctly, whereas chance would give only 33.3%), but slightly less good for girls (59% correctly predicted).

For the other two groups the predictions are better then chance but not as good as for the polytechnic groups. For girls, social-class variables alone are the best predictors of students bound for colleges of education (67% predicted accurately); adding the other variables considerably reduces the power to predict this group. What differentiates girls bound for colleges of education from either potential polytechnic students or pupils going into full-time employment is their tendency to belong to the middle class. The other variables that are important for girls are all measures of attitudes. When we look at parents' attitudes towards their jobs (0.73 beta co-efficient of 0.23), we find that it is the parents of polytechnic students who are most satisfied with their jobs, while the parents of college of education students are the least satisfied; on the question of parental authoritarianism (0.81, beta co-efficient of 0.30), polytechnic students have the most authoritarian parents; finally when we consider pupils' authoritarianism (0.68, beta co-efficients of 0.21), we find that college of education students are the most authoritarian.

For boys the three variables that discriminate potential polytechnic students from the other two groups seem to be the attitudes of their parents towards jobs (0.41, beta co-efficient of 0.15), the interaction between intrinsic motivation and achievement (0.46, beta co-efficient of 0.17) and extrinsic motivation I - the desire for high-status jobs and recognition of their achievements by others (0.43, beta co-efficient of 0.16). What is surprising is that these parents are satisfied rather than dissatisfied with their jobs, whereas for the overall sample of boys the reverse was true, as is indicated by the regression analysis.

The discriminating variables do not allow accurate prediction of pupils bound for colleges of education or pupils going into the full-time employment. From Figure 33 (the groups plotted in relation to the discriminant function), all one can say is that they appear to be the opposite of university students. They are pupils who either lack the achievement to go to university or, if they have the achievement, lack the motivation to go to university (intrinsic motivation); surprisingly, this lack of intrinsic motivation is more true of pupils bound for colleges of education than of those going into full-time employment (see Figures 31 - 32 for the mean scores of the different aspiration groups on intrinsic motivation and achievement).

If we look at the scores for the groups on extrinsic motivation II (money), then boys going to colleges of education and into full-time employment do have a significantly higher score on this variable than do the other two groups (university or polytechnic) $F = 4.95$, $p < 0.01$. There is some indication therefore that this may be the motivating force for these groups.

This variable does contribute something towards the discriminant function (0.23), but not as much as some of the others. As the relationship between aspirations and extrinsic motivation II was non-linear for girls, it was not possible to see if there was a similar trend for them.

C H A P T E R 12

Sex differences

Although the consideration of sex differences in motivation was not one of the original aims of the research, the analysis perforce raised the issue. This short chapter therefore looks at the sex differences found in the research and discusses briefly some of the reasons why these differences should have occurred. Some of the reasons discussed are of necessity in the form of hypotheses as little research has been done specifically on sex differences in motivation.

In order to analyse sex differences, the sample was divided up into aspiration groups. This was done because the mean scores of the different aspiration sub-groups on the other variables were often very different (see Table 29), and using the overall mean score for each sex might have distorted the picture. No significant differences were found between the sexes in any of the sub-groups on the following variables:- father's occupation, parents' education, parents' attitudes towards their jobs and pupil's achievement. In only one sub-group was there a significant sex difference on parents' attitudes: for the pupils going into full-time employment, boys' parents were significantly more authoritarian than girls' parents ($z = 2.32$, $p < 0.01$). As regards the pupil's own attitudes, there was only one significant sex difference and that was in the university group, girls being significantly less authoritarian than boys ($z = 1.96$, $p < 0.05$).

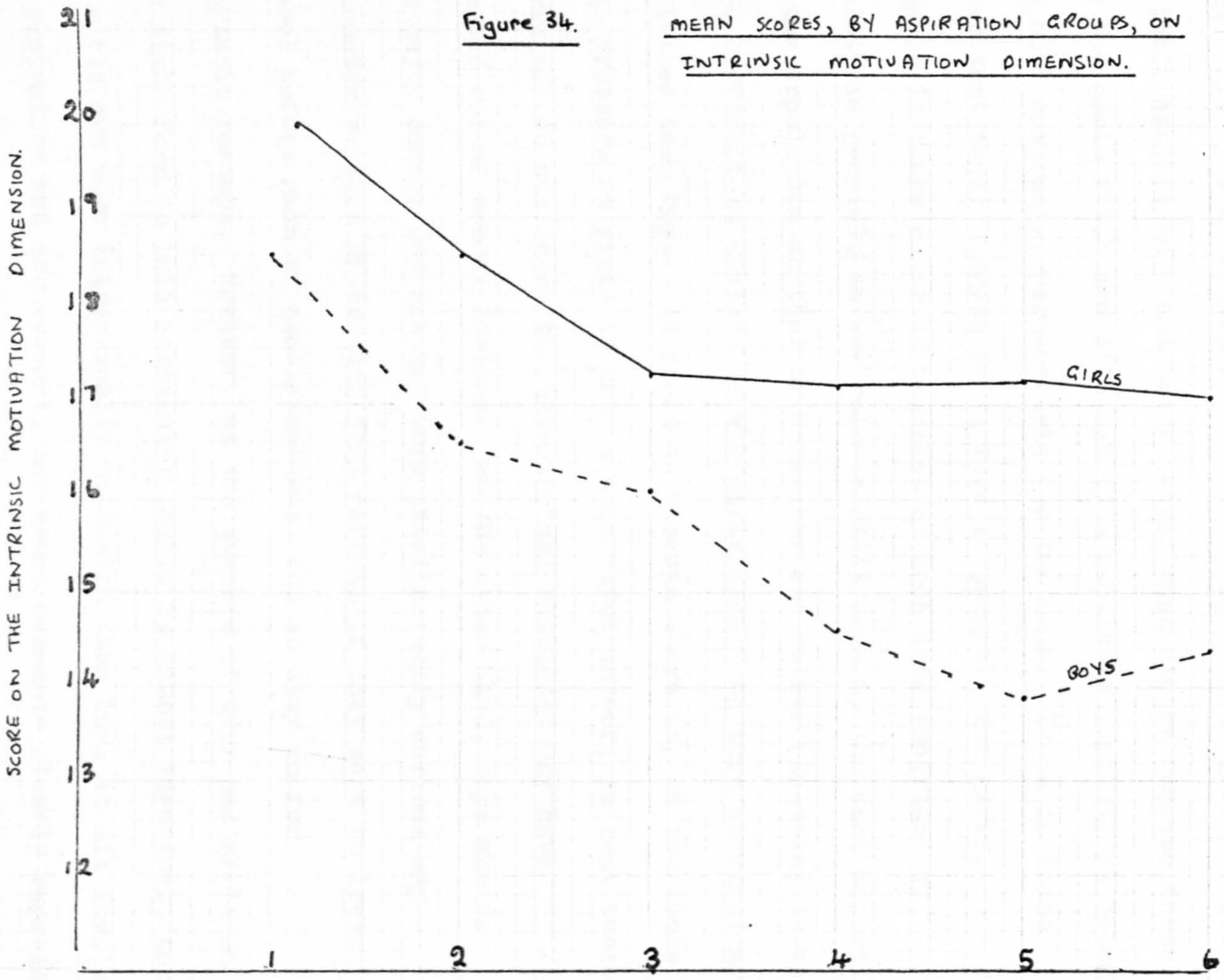
The lack of sex differences on social class variables is perhaps rather surprising given the "popular" mythology that working-class parents do not regard education as valuable for girls. Clearly, the parents of this particular sample of sixth-

formers do not adhere to the myth, as there is no evidence to suggest that more boys than girls come from working-class backgrounds. Whatever doctrines about education these working-class parents hold, they appear to apply them to both boys and girls.

In the area of motivation, however, there are considerable sex differences. Girls in all sub-groups are significantly more intrinsically motivated than boys, except for polytechnic students, where there is no difference. All of the differences are significant at the 1% level (university $z = 2.71$, $p < 0.01$; college of education $z = 2.97$, $p < 0.01$; full-time employment $z = 3.76$, $p < 0.01$). Conversely, boys are significantly more extrinsically motivated than girls as regards the desire for status and recognition of their achievement (extrinsic motivation I). This is true for all sub-groups, and the differences are all significant at 1% level (university $z = 3.21$, $p < 0.01$; polytechnic $z = 2.09$, $p < 0.01$; college of education $z = 3.75$, $p < 0.01$; full-time employment $z = 3.81$, $p < 0.01$). The only sub-group that showed a sex difference on extrinsic motivation II (money) was the group going into full-time employment, where boys were significantly more motivated by money than were girls. On extrinsic motivation I there were no within-sex differences by aspiration. This was not true for the intrinsic motivation scale, where there are significant within-sex differences as can be seen from the diagram given below (Figure 34).

In some cases the within-sex differences are greater than the between-sex differences; for example, the mean difference between boys and girls going to university is 1.73, while the difference between boys going to university and boys going into

Figure 34. MEAN SCORES, BY ASPIRATION GROUPS, ON INTRINSIC MOTIVATION DIMENSION.



ASPIRATIONS:-

1 = University
2 = Art, Music or Drama College
3 = Polytechnic.
4 = College of Education
5 = Full-time Employment
6 = Don't know.

full-time employment is 4.64 for girls this difference 2.95. As far as intrinsic motivation is concerned, therefore, both sex and aspiration significantly affect the scores, and in some cases differences in aspiration produces greater differences in scores than does sex. As we have seen above boys going to university are much more like girls going to university with respect to intrinsic motivation than they are like boys going into full-time employment. The same is also true for girls.

It is perhaps not surprising that boys are motivated more than girls by such considerations as a high-status job, recognition of their achievements and doing better than others because these are the goals which are stressed by a capitalist society as being the most desirable, particularly for the male. It is in these areas that their success or failure is judged. For girls, success in these areas is regarded as much less important by society in general, as her role is still seen by the vast majority of the population as that of homemaker and mother (Epstein, 1971). More difficult to explain is why girls should be more intrinsically motivated than boys. It could be because there is, on the whole, less pressure on girls to make a successful career, so that those girls who do not enjoy the intellectual challenge may have dropped out of school earlier. On the other hand, boys who do not enjoy school and are not very intellectually curious may encounter serious opposition from parents if they want to leave school before gaining qualifications, and so stay on for extrinsic reasons. However, as the numbers of boys and girls in the sixth form in this particular sample is almost identical, and as girls are more intrinsically motivated than boys at all levels of aspiration and achievement, the above comments clearly represent

only a partial explanation. More research is needed before we can understand why there should be this large sex difference in intrinsic motivation.

Finally there are differences in aspiration between the sexes: there are fairly equal numbers of boys and girls going to university, polytechnic, and art, music or drama college, but far more girls than boys opt for college of education, and more boys than girls are going directly into employment, usually with some form of apprenticeship or on-the-job training. This difference again probably reflects cultural norms. There are far fewer opportunities for girls to take up apprenticeships or have on-the-job training for skilled occupations, whereas teaching has always been considered a "good" job for girls, as it can be combined easily with child-rearing.

C H A P T E R 13

Summary of results and discussion

1. Motivation

Analysis of the data on motivation identified three main dimensions: intrinsic motivation, extrinsic motivation I concerned with status and recognition of achievement, and extrinsic motivation II concerned with money. The first two of these dimensions are orthogonal to one other, the scores on one dimension being independent of the scores on the other. Examination of the distributions of scores on the two dimensions show that some pupils are more motivated by one type than the other, but that some pupils score equally high or low on both dimensions. The dimension concerned with money is not completely independent of the other two dimensions; there is a tendency for pupils who have a high score on this dimension to have a low score on the intrinsic motivation dimension. There is also a slight tendency for pupils who score highly on one extrinsic dimension to have a high score on the other also; this, however, is not true for all pupils, as some are interested in either status and not money (university-bound pupils) or money and not status (pupils going into full-time employment). It is to reflect these differences that two extrinsic motivation dimensions were used rather than one.

2. Social class

Originally it had been intended to use one measure of social class comprising father's occupation, parents' education, parents' attitudes towards their jobs, parents' attitudes towards education and parents' attitudes towards authority. Following the analysis,

it was decided to keep many of these components as separate measures, although some of them correlated with each other. Father's occupation, parents' education and parents' attitudes towards their jobs were kept as three separate measures, although there was a tendency for fathers with working-class occupations to have had no opportunity for higher education and to be dissatisfied with their jobs. Authoritarianism, however, was found to be independent of the other social-class measures, this factor being orthogonal to them in the analyses. Thus there is no evidence, in this particular sample, that authoritarianism is a characteristic of working-class parents.

3. Pupil's attitudes

Pupil's attitudes towards education and authority reflected those they believed to be held by their parents, although pupils saw their parents as more authoritarian than themselves. The correlation between parents' and pupil's attitudes was 0.46 for boys and 0.56 girls which, although indicating some level of agreement, nevertheless shows that pupils do not necessarily have the same attitudes as their parents.

4. Sex differences

No significant sex differences were found in relation to father's occupation, parents' education, parents' attitudes towards their jobs and pupil's achievement. There were some slight differences in parental attitudes: boys going into full-time employment had parents who were more authoritarian than those of girls in this sub-group. As regards pupils own attitudes, girls going to university were significantly less authoritarian

than boys going to university. The main sex differences were on the motivation variables: girls, at all aspiration levels, were significantly more intrinsically motivated than boys and boys were more extrinsically motivated than girls. The only differences in terms of aspirations were that more girls opted for teacher training college and more boys for full-time employment, usually with some form of further training.

5. The relationship between home background, achievement, motivation and aspirations

Within this group of sixth-formers there was no significant relationship between any of the social-class measures used and achievement or aspirations. Thus high achievers with high aspirations are just as likely to have working-class as middle-class parents.

The relationship between achievement and motivation is fairly complex, but overall it is fair to say that no one form of motivation is particularly associated with high achievement. Thus pupils who are intrinsically motivated, or extrinsically motivated, or motivated by both types of motivation can be high achievers, although there is a very slight tendency for high achievers to be intrinsically motivated and low achievers to be motivated by money. These relationships, however, are very small. There is therefore support for Swift's hypothesis that pupils with different types of motivation can be equally successful within the school system.

What cannot be established, however, is the relationship between type of motivation and home background, as measured by the variables used in this research project. Intrinsic motivation is not, as was originally hypothesised, associated

with being middle-class, but is independent of both social class and parental attitudes. The same is not true of extrinsic motivation; although social-class measures such as father's occupation and parents' education play no part in determining extrinsic motivation, parental attitudes do play an important part. Extrinsic motivation in both boys and girls is associated with authoritarian parents and, in the case of extrinsic motivation I (status and recognition), with authoritarianism in pupils also. A desire for status and recognition of achievements is also associated with parents being dissatisfied with their jobs. These findings support Swift's hypothesis that parents who are dissatisfied with their jobs (and there is a tendency for them to be working-class rather than middle-class) have authoritarian attitudes, and do have children who are motivated by a desire for high-status jobs and recognition of their achievements - who desire the extrinsic rewards a "good" education can give. The desire for money in pupils is also associated with authoritarian parents (but not with the attitudes of the pupils themselves), and with low achievement.

What therefore can be said in conclusion about the relationship between motivation and social class? It would seem that the parents of sixth-formers have many attitudes and values in common irrespective of their occupation. Extrinsic motivation in pupils is associated with authoritarianism in both pupils and parents and with parental job dissatisfaction; these characteristics however are not confined solely to working-class parents: pupils from any social-class background can be intrinsically motivated.

On the basis of these findings I would like to elaborate on Swift's theory, thus providing a model for further research.

I would suggest that four groups of parents can be identified with different backgrounds and values. One group of parents have working-class occupations with which they are satisfied, do not see the value of education for their children and therefore encourage them to leave school as soon as possible. Such a group did not appear in this research project as their children would have left school at the end of the fifth form. A second group of parents also have working-class occupations but they are dissatisfied with them and see education as a way out for their children; their children are both academically successful and extrinsically motivated. A third group of parents differ from the second group only in that their occupations are middle-class. Finally, there is a group of parents who have middle-class occupations with which they are satisfied, and who take for granted that their children will stay on at school and go into higher education as a means of perpetuating their way of life. For the children of these parents pressure would only be brought to bear if the pupil wanted to leave school, as staying on would be the norm. More detailed research, in particular a longitudinal study, would be necessary to confirm the existence of those groups suggested by my research and study more closely their effects on pupils' attitudes and motivation. Clearly the extent to which pupils accept and conform to the attitudes of their parents will be an important factor. This research has shown that only in some cases do pupils report sharing their parents' views.

The failure of the research to establish any link between home background and intrinsic motivation is one of its most interesting and important findings. If intrinsic motivation has its antecedents in the home background, then it is caused by

agents other than those considered in this study. It is clear however that whatever these agents are, they cannot be predicted on a simple social-class basis using such measures as father's occupation, parents' education and, perhaps more surprisingly, parents' attitudes to education. In the pilot study of this project, questions were asked about how much pupils felt their parents encouraged curiosity. Such an item failed to discriminate between social classes, as all pupils said their parents had encouraged them to be curious. It could be that parents who value education, irrespective of social class, encourage curiosity in their children, particularly when they are young, thus developing intrinsic motivation. Stressing the external rewards to be gained from educational qualifications may only come later when the pupil is at secondary school.

Kagan and Moss (1962) however provide evidence to suggest that factors other than parental involvement play a part in the development of intrinsic motivation. They found that high levels of intellectual achievement at ages 10-14 and in adulthood were associated with task mastery (language and numerical skills, an enjoyment of intellectual tasks, a high level of curiosity and a desire to acquire knowledge) at period II of their longitudinal study (ages 3-6), but not with period I (ages 0-3); the correlation between task mastery in period III (ages 6-10) and the later stages was even higher. Could it be therefore that the school plays an important role in determining intrinsic motivation, and that the very early experiences of the home background are not as important? Clearly, the evidence from Kagan and Moss points to an investigation along these lines. How therefore do home and school variables interact to produce pupils with different types of motivation?

The schools' teaching methods obviously play a large part in determining how challenging and interesting pupils find school work both using their inherent curiosity and enhancing it. Under such conditions pupils will develop an interest in the work for its own sake which in some cases is sufficient motivation in itself for them to continue their education, more so in the case of girls then boys. Other pupils, while developing an interest in the work for its own sake in addition value the extrinsic rewards stressed by their parents. Conversely pupils whose parents do not stress the extrinsic rewards of the education system (the middle-class group described above) may come to value these rewards because of the emphasis given to them in the school. These pupils may also, independent of both schools and parents, have realised that educational qualifications are a prerequisite for the kinds of jobs their parents have and, consequently, their life-style. If they wish to have a similar life-style, then they must have the qualifications.

Despite the stress that may be laid on the extrinsic rewards of a "good" education by both school and parents, extending the analysis to consider pupils' aspirations revealed that intrinsic motivation was a more important agent in pupil decision making. Achievement and intrinsic motivation were responsible for discriminating between university and non-university students. When achievement was held constant, intrinsic motivation was the most important predictor of whether or not boys would go to university; in the case of girls, intrinsic motivation was the largest predictor, but non-authoritarianism was also important. Extrinsic motivation I was only important in predicting polytechnic male students, along with parental and pupil attitudes. Extrinsic

motivation II contributed slightly towards predicting those pupils who would go into full-time employment. Parents' attitudes towards their jobs were also involved in predicting potential polytechnic students, but these parents were satisfied rather than dissatisfied with jobs. For girls, extrinsic motivation played less of a part in the prediction, and parents' attitudes more.

From these findings it is clear that parents' attitudes towards their jobs do play some part in determining both motivation and aspirations, but exactly what part is not clear from this research project. Over all, job dissatisfaction is associated with extrinsic motivation, but for the group of pupils who are going to a polytechnic it is parental job satisfaction that is important. In order to make a final assessment of the role parents' attitudes towards their jobs play in motivating their children, more research is necessary possibly on the lines already outlined. It is also possible that interviewing parents in some depth may prove more fruitful than the very short questionnaire that was used in this study.

It would seem that although a large number of the pupils are extrinsically motivated to some extent, only for polytechnic students is such motivation important in decision-making. However, if more detailed information had been gathered on aspirations (this was not one of the major variables of the original research project, and it was only with hindsight that its importance was realised) - information such as type of course being followed, then one might well have found that extrinsic motivation I was associated with specific vocational courses such as law, engineering, medicine, etc. The relationship between this type of motivation and going to polytechnics, which on the whole offer vocational

courses (both degree and non-degree), lends some support to this hypothesis, as do the research findings of Smithers and Melrose (1973). They found that scientists studying a vocational course at Bradford University (industrial chemistry and applied physics) were more interested in the material rewards of their education than were students studying pure science at Warwick University, who tended to emphasise the importance of self-expression. Within Warwick University, engineering students saw material rewards as more important than did those studying pure science, arts and social science.

One of the most important findings of this study however is that it is intrinsic motivation which almost exclusively determines whether or not pupils will choose to go to university. Although these pupils may be extrinsically motivated as well, it would appear that their decision to go on with their education rests not on the desire for the external rewards of a good education but on whether or not they enjoy studying certain subjects and whether they are intellectually curious. Perhaps Skinner was right when he said all pupils will tell you they value the external rewards of an education, but that actual motivation to study is based on more immediate "rewards", in this case the enjoyment of what they are doing.

The results of this project show that the motivation of sixth-formers is far from simple, and that several factors are operating in different ways for different sub-groups within the sixth form. One cannot regard sixth-formers as a homogeneous group. This particular piece of research appears to explain, with some degree of success, the motivation of university-bound students, particularly boys; but it has only been able to hint

at the factors which motivate pupils with different aspirations. It has also shown that social-class measures such as father's occupation and parents' education are no longer relevant in explaining differences in either the achievement, aspirations or the motivation of sixth-formers, and that although parental attitudes play a part in the motivation of their children, this is confined solely to extrinsic motivation.

Further research is clearly necessary in this area, but such research must take into account both sex differences and differences in aspirations when looking at the motivation of sixth-formers. Ideally, each aspiration group needs to be studied separately before one can come to a greater understanding of why pupils are in the sixth form and why they have particular aspirations. Looking at differences in motivation and, in particular, using the model of motivation proposed in this research project, still raises some problems which future research needs to take account of. These problems are mainly of conceptualisation and measurement, and they are discussed in my final chapter. Also in that Chapter, I should like to reconsider, in the light of the actual experience of the research, certain issues which were raised in earlier chapters.

C H A P T E R 14

Conclusion

Much of the research on intrinsic motivation has either not defined the term 'intrinsic' or not defined it adequately (see Chapter 2), points reiterated by Calder and Staw (1975). This could be due not so much to the difficulties of defining intrinsic motivation as to the difficulties of operationalizing it. This is criticism, however, which cannot be levelled at the body of work done on intrinsic motivation by Deci (1975) (this research has been going on concurrently with my own). His book represents the largest contribution to the field of intrinsic motivation since the 1960s and therefore I have dealt in some detail with both his definition and measurement of intrinsic motivation.

As the conceptualization and measurement of intrinsic motivation are inextricably bound together, how one conceptualizes it will have inevitable consequences for how one measures it. As was said in the introduction, a large part of this research project was concerned with measuring motivation, and in this concluding chapter I would like to contrast the conceptualization and measurement of intrinsic motivation used in this research project with that used by Deci, mainly because I feel that he is in error both in how he defines intrinsic motivation and in how he measures it.

Intrinsic motivation in this study has been defined as the resolution of incongruity brought about by the relationship between the individual's previous experience and the stimulus properties of the task. Individuals are attracted towards such tasks, and if none exist at a particular point in time, they will actively

seek them out, because the brain needs stimulation in order for the organism to survive (Hebb, 1955). Bruner (1966) has put it slightly differently: "Curiosity is almost a prototype of the intrinsic motive ... What activates and satisfies curiosity is something inherent in the cycle of activity by which we express curiosity. Surely such activity is biologically relevant, for curiosity is essential to the survival not only of the individual but of the species." It is this physiological or inherent aspect of intrinsic motivation which I think is crucial in its conceptualization. We are in a sense "compelled" to resolve incongruity; to ignore something that has aroused our curiosity is difficult, if not impossible. Whether or not the tasks that a pupil encounters in school are of this nature depends very much on both the task and the pupil. For some pupils in this study the results seem to indicate that school tasks are intrinsically motivating - they are also the same kinds of tasks as they do in their own leisure time. For other pupils, however - those going from school into full-time employment - the tasks encountered in school did not appear to be intrinsically motivating although their responses to some items indicated that they were intrinsically motivated by similar activities that were outside the school curriculum.

Deci's conceptualization, however, is quite different; despite the fact that he starts from the same theorists he defines intrinsic motivation in the following way:

> "Intrinsically motivated behaviours are behaviours which a person engages in to feel competent and self-determining. The primary effects, therefore, are in the tissues of the central nervous system rather than in non-nervous-system tissues. Intrinsically motivated behaviours will be of two general kinds. When there is no stimulation people will <u>seek</u> it. A person who gets no stimulation will not feel competent and self-determining; he will probably feel 'blah'. So he seeks out the opportunity to behave in ways which will allow him to feel competent and self-determining. He will seek out challenge. The other general kind of intrinsically motivated behaviour involves <u>conquering</u> challenges or reducing incongruity. Only when a person is able to reduce incongruity (or reduce dissonance, etc.) and only when a person is able to conquer the challenges which he encounters or creates will he feel competent and self-determining. He will feel satisfied when he is able to seek out pleasurable stimulation and deal effectively with overstimulation. In short, people seem to be engaged in the general process of seeking and conquering challenges which are optimal for them."

Deci has added a different dimension in his conceptualization of intrinsic motivation, that of reward. Tasks that require the resolution of incongruity are done, not because of the nature of the task itself, but because of the feelings that accompany the completion of the task. When the task has been completed one is rewarded for the effort by feeling competent and self-determining. I would argue that if a task is completed to allow the individual to feel competent and self-determining, then he is no longer doing the task because he is intrinsically motivated by it. Doing a task for the reward at the end of it - even if the reward is feeling competent - is extrinsic motivation.

The motivation is not inherent in the stimulus properties of the task itself, but in the reward which is external to the task but dependent upon its completion. To argue that the individual feels competent and self-determining only when he has resolved incongruity, that the resolution of incongruity is always accompanied by feelings of competence and self-determination and, finally, that individuals only seek out such tasks because they will allow such feelings seems to me to go against the whole concept of intrinsic motivation. It could be that if one performs a task which requires the resolution of incongruity, then on completing it one may feel competent and self-determining; but if one was intrinsically motivated by the task then the motivation would stem from the incongruity not from any reward that may be gained by completing the task. As Bruner (1966) says, "we would think it preposterous if somebody thought to reward us with praise or profit for having satisfied our curiosity. However pleasant such external reward might be and however much we might come to depend upon it, the external reward is something added".

Although such rewards as feeling competent are in a sense bestowed by the individual on himself, they are still external to the task. The completion of a task in which one is not intrinsically motivated could well be accompanied by feelings of competence. This distinction between being motivated by the task for its own sake and being motivated by feelings of competence and self-determination is, I think, an important one, and failure to distinguish between the two has led to confusion over exactly what intrinsic motivation is. I would strongly argue, for the reasons given above, that it is the former and not the

latter. That there is a difference between these two ideas is demonstrated to some extent by an item in my questionnaire - M19 ("I enjoy working out the solution to a complicated problem". This item was interpreted in different ways by different pupils; it correlated with the other items to measure intrinsic motivation, but it also correlated with some items to measure extrinsic motivation, particularly M13 ("I like other people to recognise my achievements"). I would hypothesise that those pupils who solve problems because they want to feel competent and self-determining are giving themselves a similar reward to that of recognition by others; being able to solve complicated problems gains one status and approval, competence being highly approved in our society. Some pupils, however, are intrinsically motivated in solving complicated problems because they are incongruous with their previous experience.

Deci's interpretation of intrinsic motivation stems from two main sources, White's (1959) concept of competence motivation and the work of de Charms (1968). For de Charms, intrinsic motivation stems from the desire to feel personal causation: "Man's primary motivational propensity is to be effective in producing changes in his environment. Man strives to be a causal agent, to be the primary locus of causation for, or the origin of, his behaviour ... Whenever a person experiences himself to be the locus of causality for his own behaviour .... he will consider himself to be intrinsically motivated. Conversely when a person perceives the locus of causality for his behaviour to be external to himself ... he will consider himself to be extrinsically motivated". I find this statement of de Charms illogical. Intrinsic and extrinsic motivation differ, not in

the source of motivation, internal or external to the individual, as the source of all motivation must be within the individual, but in the environmental conditions responsible for "triggering off" the motivation. In the case of intrinsic motivation it is the relationship between the stimulus properties of the task and the individual's previous experience; in extrinsic motivation it is the relationship between the reward offered for the completion of a task and the value the individual places on that reward. Deci's use of de Charms' idea of the individual's perceptions of motivation as internally or externally caused, linked to the idea of feelingsof competence and self-determination, leads to the following statement from him:-

> "If a person engages in a dull and boring activity for inadequate justification (rewards), and if he feels personally responsible for performing the behaviour, his intrinsic motivation for the activity will increase as a means of justifying the behaviour ... The notion of personal responsibility ties in closely to the personal causation and self-determination which we've asserted is the psychological basis of intrinsic motivation. For a person's intrinsic motivation to be affected by his behaviour and the justification for that behaviour he must feel personally responsible for having engaged in that behaviour (i.e. he must feel self-determination). If he feels personal responsibility and if he has insufficient extrinsic justification, he will enhance his intrinsic motivation for the activity, that is, he will come to see the activity as something he does to feel competent and self-determining."

Whatever may be the motivation for an individual performing a boring task, it cannot be intrinsic motivation. Chambers Everyday Dictionary defines "boring" as "wearisome, failing to interest"; by definition, then, a boring task cannot arouse our curiosity or provide incongruity so none of the conditions necessary for intrinsic motivation are present. The task might well be performed in order to feel competent and self-determined - one may feel some self-satisfaction at having forced oneself to complete a boring task which was regarded as necessary - but that is not intrinsic motivation.

From my research there is some evidence to support my argument that feeling competent and self-determined is not the same as intrinsic motivation. If tasks that provided incongruity with our previous experience are engaged in not because of that incongruity, but in order to feel competent and self-determined, then it would be necessary for one to be successful in completing those tasks. Intrinsic motivation therefore should be correlated with high achievement; this, however, was not the case in this research project. Some pupils who were unsuccessful in terms of numbers of 'O' and 'A' levels gained still had a high level of intrinsic motivation and hoped to continue their studies at university, although the chances of their achieving a place at a conventional university were small; it is such students, one could hypothesise, who join the Open University. By the criterion of examination success, then, these students would have little encouragement to think they were competent and self-determining; I would argue that the satisfaction of their own curiosity was sufficient motivation for these pupils. Similar findings were reported by Day (1968), who found no

correlation between curiosity and either IQ or achievement in 12 - 16 year olds.

Finally a brief discussion of Deci's use of White's (1959) concept of competence. Deci has interpreted this concept of White's as engaging in tasks in order to feel competent. White however, in his article, does not mention <u>feeling</u> competent; he simply talks about competence in much the same way as Hunt talks about the resolution of incongruity and Bruner of curiosity. He describes competence as satisfying an "intrinsic need to deal with the environment". He goes on to say of competence motivation: "obviously there are no consummatory acts; satisfaction would appear to lie in the arousal and maintaining of activity .... instrumental acts will be learned for the sole reward of engaging in them". I would argue that Deci's concept of the feeling of competence is a misinterpretation of White and that his concept is concerned with consummatory acts, which White's clearly is not. The concept of competence has been used in the present study in the sense in which I think White meant it, a "compulsory" need to explore and deal effectively with the environment - to resolve incongruity.

I would like to turn now to the problem of measurement. In some of the work done on curiosity with young children, observation methods have been used. Novel stimuli, a toy or a new activity, are introduced into the situation and the children's response to the stimuli is watched (Minuchin, 1971). Other researchers have used teacher and peer-group ratings of curiosity (Maw and Maw, 1961; Greenberger, 1969). Greenberger compared teacher ratings of curiosity with an independent measure of curiosity based on the number of questions children

asked in order to find an explanation for an incongruous picture. He found that scores on the test and teacher ratings were correlated for boys but not for girls; his explanation for this is that behaviour which "appears related to curiosity (asking questions, examining carefully) in fact can be prompted by other motives, such as the seeking of approval". This raises the crucial problem one faces when attempting to assess an individual's motivation by either asking other people or observing behaviour: identical behaviour can be produced by different motives in different people. Two sixth-formers, for example, may both ask a number of questions of the teacher, one because he is interested in the subject, the other because he wants as much information as possible in order to get good exam grades. Observation, or asking the teacher which pupils were most curious, would not reveal this difference. Deci (1971) also used observation in an experimental situation to determine whether or not students were intrinsically motivated. His subjects (who took part in the experiment as part of a psychology course requirement) were given puzzles to solve; after they had solved a number of these the experimenter then left the room, ostensibly to feed the results into a computer, but in fact to observe the behaviour of the students. During his absence a number of options were open to the participants in the experiment; they would read magazines (New Yorker or Playboy), do nothing, or work on the puzzle. Those who carried on solving puzzles were considered to be intrinisically motivated, those who chose to do other things were not. After they had completed the task students were asked to rate the interest of the task on a nine-point scale. The mean for the group was 7.25. Deci therefore argues that the

task was intrinsically motivating. On the basis of these results he has used this same task as a measure of intrinsic motivation in other experiments reported subsequently (1972, 1975). The number of subjects who took part in the above experiment was twenty-four.

The assumption that students who choose to solve puzzles rather than read magazines or do nothing are intrinsically motivated does not seem to me to be valid. It could be that they were intrinsically motivated, but they may simply have preferred, out of the limited range of options open to them, to do puzzles rather than the other things available, without being intrinsically motivated by any of them. For some students the puzzles may have provided the correct level of incongruity to be intrinsically motivating, while others may have found them congruent. The fact that the students took part on compulsion could well invalidate the results; those who carried on doing puzzles in the absence of the experimenter may have done so because they thought they were being watched, or because they thought that practice might improve their performance and they wished to impress their lecturers. The conclusion that they were intrinsically motivated is only one of several possible explanations for their behaviour. The only way to find out what motivated pupils to carry on solving puzzles or to choose some other activity would be to ask them. The students were asked to rate the interest of the task but no data is given on whether a high rating correlated with persistence at the task or vice versa; although the overall rating is quite high, some students obviously rated the task lower on interest than others.

Deci has used this task as a measure of intrinsic motivation in other experiments with college students without, as far as I can tell from reading the articles, asking any subsequent students how interesting they found it. To generalize from a sample of twenty-four college students to students in general is methodologically unsound, but it is a small error in comparison with the real weakness of the experiments, which lies in the assumptions made by Deci. To assume that a task can be defined as intrinsically motivating in isolation from the individual who is to perform it seems to me to be nonsense. If intrinsic motivation is the result of the interaction between the stimulus properties of the task and the individual's previous experience, then a task can only be defined as intrinsically motivating in the light of that experience and only for that individual. Tasks that are intrinsically motivating for one pupil may be totally boring to another, depending upon their previous experience. To decide that some tasks are intrinsically motivating and others not purely on the nature of the task is not possible even when one's population is as narrowly defined as college students. It could well be that some college students would be intrinsically motivated by the puzzles, just as some students are intrinsically motivated by a chess game, but equally, there could be many students who are not intrinsically motivated either by puzzles or chess.

In measuring differences in type of motivation it is essential to ask the individuals concerned about their motives. I would say that, for all its imperfections, it is in fact the only way of assessing such differences. It may well be that some behavioural observations could be used in conjunction

with questionnaires or interviews but, for reasons already given, observation alone is not enough. This is the main problem with attempting to do research of this kind whose aim is to tease out differences in motivation, not just whether or not individuals are motivated. If a task is completed, then one can assume quite reasonably that the individual was motivated to do it, but as soon as one wants to find exactly in what way the individual is motivated then the difficulties arise, and the only way of solving the problem at the moment is to ask the individuals concerned. One can of course argue that we don't know if the reasons they give are the "real" reasons: the fact that they say they are intrinsically motivated does not prove either that intrinsic motivation exists or that they are intrinsically motivated. This is true and such criticism can be levelled at most psychological research, one can at best only make inferences about cognitive processes from what individuals say and do, and I would argue that in this particular area what individuals say is the most useful method of understanding their behaviour.

Much of this chapter has concentrated on intrinsic motivation, mainly because that is the area with most problems. Extrinsic motivation also raises problems, but of a different kind. Within the education system it is frequently taken for granted that pupils are extrinsically motivated by both the rewards given by the school for success and the rewards that success in examination can bring, such as good jobs. While it is clear from this research that such rewards are valued by some sixth-form pupils, they are not valued by them all; other pupils, while valuing such rewards are, it would seem, more

influenced by their intrinsic motivation to study the subject when educational decisions are taken. The influence of extrinsic rewards therefore is in danger of being not only taken for granted but considerably over-rated in the motivation of sixth-formers.

Finally, one has to ask the question: how important is it to distinguish between different types of motivation in sixth-formers, or indeed, any other pupils? Interesting though it may be from a theoretical point of view, does it have any practical value? I think it does. Much concern has been expressed recently over the fall in applicants to institutes of higher education, particularly universities, resulting in a government initiated piece of research which presented a preliminary report in 1976 (D.E.S. 1976). This particular study totally failed to explain why there was a fall in applicants to university, mainly because it concentrated purely on extrinsic factors, particularly on the perceived economic benefits of higher education. The researchers did not look at intrinsic motivation at all. My study of sixth-formers (and I am concentrating solely on comparisons with the sixth-formers in their study) showed that money was an important motivating force only for those pupils who were low achievers and/or going into full-time employment directly from the sixth-form. What determines whether or not pupils will go to university is their level of intrinsic motivation: if they are intrinsically motivated they will opt for university, but if they are not then they are unlikely to apply even if they have the qualifications. Some of these pupils were also extrinsically motivated by the desire for status and recognition of their achievements, but it is the fact that they were intrinsically motivated that was

important. I would argue that the drop in applicants has occurred because those pupils who are exclusively extrinsically motivated, and who see that a degree is no longer automatically the way to a high status job, are probably opting for more direct professional training. There is evidence to support this argument from my research, in that extrinsic motivation was associated with students who were going to polytechnic, where courses on the whole are more vocationally oriented than those offered by universities. Although applicants to university have fallen in total, this is brought about by a fall in the applicants from males, while the number of females applying has risen. Given that in the present study boys were more extrinsically motivated than girls, this would seem to be further evidence to support the argument that the drop has occurred among those pupils who were the more extrinsically motivated. Thus distinguishing between the different motives pupils have for being in the education system could well be a factor in the future planning of educational provision, particularly in higher education.

Differences in the motivation of pupils can also have implications for teaching strategies within the sixth form. For pupils who are intrinsically motivated, being allowed to find things out for themselves and to read around topics is going to keep them interested and motivated. Such an approach, however, would probably not appeal to those sixth-formers who have the more pragmatic approach to school and are only interested in gaining the qualifications necessary to get the job they want. A more directive teaching method with clearly defined tasks is more likely to keep them motivated.

What type of motivation schools should encourage is clearly a different aspect of the debate, and not one that I want to go into in any great depth. However, I do feel that as employment is no longer guaranteed to pupils and students, no matter at what level they leave the education system, we should be concentrating on developing intrinsic motivation within the education system. Developing intrinsic motivation within as many areas of the curriculum as possible will ultimately educate pupils in how to use their leisure time. Concentrating on increasing extrinsic motivation will only lead to frustration and disappointment for many people in the present, and probably continuing, employment situation.

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A P P E N D I X A

Questionnaires used in the pilot study

Biographical Questionnaire

Please tick the appropriate box

Sex Female ☐ Male ☐

Age Years ..... Months .....

Number of 'O' levels passed .....

Number of 'O' levels being taken .....

Number of 'A' levels being taken .....

Any other examinations being taken, please specify .....

.....

Please answer the questions below.

1. Are you planning to go to university, polytechnic or college?

   Yes ☐ No ☐ Don't know ☐

2. If you said 'Yes' what are your reasons for wanting to go into higher education?

3. If you said 'No' what are your reasons for not wanting to go into higher education?

4. Are you planning to go straight into full-time employment?

   Yes ☐ No ☐ Don't know ☐

Please indicate opposite each of the statements below whether each one is true of you by placing a tick (✓) in one of the three boxes opposite each statement.

1.	I play any game to win, not just for the fun of it.	True ☐	False ☐	Don't know ☐
2.	When work is set I like to be given a clearly defined task, preferably with the reading I have to do specified.	True ☐	False ☐	Don't know ☐
3.	Good exam results are the most important outcome of one's academic career.	True ☐	False ☐	Don't know ☐
4.	I spend too long on certain topics, because I get very interested and involved in them.	True ☐	False ☐	Don't know ☐
5.	I try to give each examination subject, whether I like it nor not; equal emphasis.	True ☐	False ☐	Don't know ☐
6.	I would very much like to have a job which will give me high status within the community.	True ☐	False ☐	Don't know ☐
7.	I enjoy the challenge of doing something new and difficult.	True ☐	False ☐	Don't know ☐
8.	I try to keep to set work and avoid following up interesting sidelines.	True ☐	False ☐	Don't know ☐
9.	I like to work with people who are interesting and full of new ideas.	True ☐	False ☐	Don't know ☐
10.	I prefer tasks that call for originality and initiative rather than those that are straightforward.	True ☐	False ☐	Don't know ☐
11.	I decided to stay on in the sixth form because that was what most of my friends were doing.	True ☐	False ☐	Don't know ☐
12.	If a particular topic interests me then I will follow it up in my own time.	True ☐	False ☐	Don't know ☐
13.	I enjoy feeling that I can do things better than anybody else.	True ☐	False ☐	Don't know ☐
14.	I feel pleased with myself if I work out the correct solution to a difficult problem.	True ☐	False ☐	Don't know ☐

15.	I stayed on in the sixth form mainly because my parents wanted me to.	True ☐	False ☐	Don't know ☐
16.	I get disheartened and give up easily if something is too difficult for me.	True ☐	False ☐	Don't know ☐
17.	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	True ☐	False ☐	Don't know ☐
18.	I would rather have a job which pays a lot of money but is only slightly interesting, than one that pays a small amount of money but is very interesting.	True ☐	False ☐	Don't know ☐
19.	I would rather be left to discover things for myself than have everything told to me by the teacher.	True ☐	False ☐	Don't know ☐
20.	I usually study only when I am required to, in order to pass exams.	True ☐	False ☐	Don't knoe ☐
21.	When studying a subject I am really interested in, I find I work harder.	True ☐	False ☐	Don't know ☐
22.	I enjoy discussing new ideas in my subject area with other people.	True ☐	False ☐	Don't know ☐
23.	I would very much like to have a job that is intellectually stimulating.	True ☐	False ☐	Don't know ☐
24.	I like other people to recognise my achievements.	True ☐	False ☐	Don't know ☐
25.	I find school work restricting and would prefer more freedom of choice in the topics to be studied.	True ☐	False ☐	Don't know ☐
26.	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	True ☐	False ☐	Don't know ☐
27.	How interesting a job is will be the most important factor in determining whether or not I would take it.	True ☐	False ☐	Don't know ☐
28.	I like to read a lot of books covering widely differing subjects.	True ☐	False ☐	Don't know ☐
29.	I would rather pursue my own ideas than follow a syllabus.	True ☐	False ☐	Don't know ☐

30. Without the stimulus of exams I doubt whether I would do much studying.	True ☐	False ☐	Don't know ☐
31. If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	True ☐	False ☐	Don't know ☐
32. How much prestige a job had would be the most important factor in determining whether or not I would take it.	True ☐	False ☐	Don't know ☐
33. I enjoy working out the solution to a complicated problem just to prove to myself that I can do it.	True ☐	False ☐	Don't know ☐
34. I enjoy being part of an enthusiastic group of people working on a project.	True ☐	False ☐	Don't know ☐
35. I read a lot outside my school subjects.	True ☐	False ☐	Don't know ☐
36. Without pressure from my parents I don't think I would have stayed on at school.	True ☐	False ☐	Don't know ☐
37. I get worried if my class mates get better marks on set work than I do.	True ☐	False ☐	Don't know ☐
38. I sometimes wish I was out at work earning money rather than studying.	True ☐	False ☐	Don't know ☐
39. I enjoy visiting museums, art galleries and exhibitions.	True ☐	False ☐	Don't know ☐
40. I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.	True ☐	False ☐	Don't know ☐
41. How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.	True ☐	False ☐	Don't know ☐
42. I stayed on at school because I did not want to be different from my friends.	True ☐	False ☐	Don't know ☐
43. I enjoy reading about the latest scientific theories and inventions.	True ☐	False ☐	Don't know ☐
44. Whether I like a subject or not I do my best to get a good mark.	True ☐	False ☐	Don't know ☐

45.	I didn't particularly want to stay on at school and go into the sixth form but my parents insisted that I did.	True ☐	False ☐	Don't know ☐
46.	I enjoy reading plays, novels and poetry.	True ☐	False ☐	Don't know ☐

Please indicate opposite each of the statements below whether you agree with each one by placing a tick (✓) in one of the three boxes opposite each statement.

1.	Without the right opportunities one cannot be an effective leader.	Agree ☐	Disagree ☐	Don't know ☐
2.	People who can't get others to like them, don't understand how to get along with others.	Agree ☐	Disagree ☐	Don't know ☐
3.	In the case of the well prepared student, there is rarely if ever such a thing as an unfair test.	Agree ☐	Disagree ☐	Don't know ☐
4.	Getting a good job depends mainly on being in the right place at the right time.	Agree ☐	Disagree ☐	Don't know ☐
5.	Who gets to be boss depends on who has the skill and ability luck has little or nothing to do with it.	Agree ☐	Disagree ☐	Don't know ☐
6.	It's hard to know whether or not a person likes you.	Agree ☐	Disagree ☐	Don't know ☐
7.	Without the right opportunities one cannot be an effective leader.	Agree ☐	Disagree ☐	Don't know ☐
8.	Sometimes I can't understand how teachers arrive at the marks they give.	Agree ☐	Disagree ☐	Don't know ☐
9.	Knowing the right people is important in deciding whether a person will get ahead.	Agree ☐	Disagree ☐	Don't know ☐
10.	Leadership positions tend to go to capable people who deserve being chosen.	Agree ☐	Disagree ☐	Don't know ☐
11.	People who don't do well in life often work hard but the opportunities just don't come their way.	Agree ☐	Disagree ☐	Don't know ☐
12.	There really is no such thing as "luck".	Agree ☐	Disagree ☐	Don't know ☐
13.	People are lonely because they don't try to be friendly.	Agree ☐	Disagree ☐	Don't know ☐

14. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.	Agree ☐	Disagree ☐	Don't know ☐
15. What happens to me is my own doing.	Agree ☐	Disagree ☐	Don't know ☐
16. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyway.	Agree ☐	Disagree ☐	Don't know ☐
17. In my case getting what I want has little or nothing to do with luck.	Agree ☐	Disagree ☐	Don't know ☐
18. Many times I feel that I have little influence over the things that happen to me.	Agree ☐	Disagree ☐	Don't know ☐
19. By taking an active part in political and social affairs, the people can control world events.	Agree ☐	Disagree ☐	Don't know ☐
20. Racial discrimination is here to stay.	Agree ☐	Disagree ☐	Don't know ☐
21. There will always be wars, no matter how hard people try to prevent them.	Agree ☐	Disagree ☐	Don't know ☐
22. The racial situation in Britain may be very complex but with enough money and effort it is possible to get rid of racial discrimination.	Agree ☐	Disagree ☐	Don't know ☐
23. Unfortunately an individual's worth often passes unrecognised no matter how hard he tries.	Agree ☐	Disagree ☐	Don't know ☐
24. Most students don't realise the extent to which their marks are influenced by accidental happenings.	Agree ☐	Disagree ☐	Don't know ☐
25. This world is run by the few people in power and there is not much the ordinary person can do about it.	Agree ☐	Disagree ☐	Don't know ☐
26. Capable people who fail to become leaders have not taken advantage of their opportunities.	Agree ☐	Disagree ☐	Don't know ☐
27. No matter how hard you try some people just don't like you.	Agree ☐	Disagree ☐	Don't know ☐

28.	Many times exam questions tend to be so unrelated to course work that studying is useless.	Agree ☐	Disagree ☐	Don't know ☐
29.	Becoming a success is a matter of hard work, luck has little or nothing to do with it.	Agree ☐	Disagree ☐	Don't know ☐
30.	Who gets to be boss often depends on who was lucky enough to be in the right place first.	Agree ☐	Disagree ☐	Don't know ☐
31.	How many friends you have depends on how nice a person you are.	Agree ☐	Disagree ☐	Don't know ☐
32.	Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.	Agree ☐	Disagree ☐	Don't know ☐
33.	There is a direct connection between how much effort I put into a piece of work and the mark I get for it.	Agree ☐	Disagree ☐	Don't know ☐
34.	People will get ahead in life if they have the ability and do a good job; knowing the right people has nothing to do with it.	Agree ☐	Disagree ☐	Don't know ☐
35.	It is hard to know why some people get leadership positions and others don't; ability doesn't seem to be the important factor.	Agree ☐	Disagree ☐	Don't know ☐
36.	Most people don't realise the extent to which their lives are controlled by accidental happenings.	Agree ☐	Disagree ☐	Don't know ☐
37.	There's not much point in trying too hard to please people, if they like, they like you.	Agree ☐	Disagree ☐	Don't know ☐
38.	I have often found out that what is going to happen will happen.	Agree ☐	Disagree ☐	Don't know ☐
39.	Sometimes I feel I don't have enough control over the direction my life is taking.	Agree ☐	Disagree ☐	Don't know ☐
40.	When I make plans, I am almost certain that I can make them work.	Agree ☐	Disagree ☐	Don't Know ☐
41.	Many times we might just as well decide what to do by tossing a coin.	Agree ☐	Disagree ☐	Don't know ☐

42. It is impossible for me to believe that chance or luck play an important role in my life.	Agree ☐	Disagree ☐	Don't know ☐
43. As far as world affairs are concerned, most of us are victims of forces we can neither understand not control.	Agree ☐	Disagree ☐	Don't know ☐
44. People may be prejudiced but it is possible for British society to completely rid itself of open discrimination.	Agree ☐	Disagree ☐	Don't know ☐
45. One of the major reasons why we have wars is because people don't take enough interest in politics.	Agree ☐	Disagree ☐	Don't know ☐
46. We'll never completely get rid of discrimination. It's part of human nature.	Agree ☐	Disagree ☐	Don't know ☐
47. In the long run people get the respect they deserve.	Agree ☐	Disagree ☐	Don't know ☐
48. The idea that teachers are unfair to pupils is nonsense.	Agree ☐	Disagree ☐	Don't know ☐
49. The average person can have an influence in government decisions.	Agree ☐	Disagree ☐	Don't know ☐

Below are a number of statements. Please indicate opposite each one how important <u>you</u> think these things are by placing a tick (✔) in <u>one</u> of the five boxes next to each statement.

	I think it is:-				
	of very great import-ance	of great import-ance	of some import-ance	of hardly any import-ance	of no import-ance
1. I should have a job that gives me the security of a steady income.					
2. I should have a job I personally find interest-ing.					
3. I should not argue with adults.					
4. I should make up my own mind about things.					
5. I should try to 'come out on top' and be better than everybody else.					
6. I should be happy in the job that I do.					
7. I should be honest.					
8. I should be considerate towards other people.					
9. I should try to be someone people can depend on.					
10. I should do what I thought was right irrespective of what other people say.					
11. I should do what they (my parents) tell me because they know best.					
12. I should develop self-control.					

Below are a number of statements. Please indicate opposite each one how important <u>your parents</u> think these things are by placing a tick (✓) in one of the five boxes next to each statement.

	My parents think it is:-				
	of very great import-ance	of great import-ance	of some import-ance	of hardly any import-ance	of no import-ance
1. I should have a job that gives me the security of a steady income.					
2. I should have a job I personally find interesting.					
3. I should not argue with adults.					
4. I should make up my own mind about things.					
5. I should try to 'come out on top' and be better than everybody else.					
6. I should be happy in the job that I do.					
7. I should be honest.					
8. I should be considerate towards other people.					
9. I should try to be some-one people can depend on.					
10. I should do what I thought was right irre-spective of what other people say.					
11. I should do what they (my parents) tell me because they know best.					
12. I should develop self-control.					

Below are a number of statements. Please indicate how strongly you would agree with each of them by placing a tick (✓) in one of the five boxes next to each statement.

	I would:-				
	Strongly Agree	Agree	Have no feelings either way	Disagree	Strongly Disagree
1. Life is so short that having a good time is more important than anything else.					
2. While still at school I should try to make detailed plans about my career.					
3. A good education is the only way of improving your standard of living.					
4. You can achieve anything you want provided you work hard enough.					
5. People in authority make rules for good reasons and therefore they should be obeyed and not questioned.					
6. Children should be given every encouragement to stay on at school.					
7. Staying on at school is a waste of time.					
8. Children should discuss their school work with their parents.					
9. As long as people do their best, it does not matter if they do not do as well as other people.					
10. Children should be encouraged to ask questions about and explore their surroundings.					

I would:-

	Strongly Agree	Agree	Have no feelings either way	Disagree	Strongly Disagree
11. People who do not take advantage of the opportunity to stay on at school are foolish.					

Below are a number of statements. Please indicate how strongly <u>your parents</u> would agree with each of them by placing a tick (✔) in one of the five boxes next to each statement.

	My parents would:-				
	Strongly Agree	Agree	Have no feelings either way	Disagree	Strongly Disagree
1. Life is so short that having a good time is more important than anything else.					
2. While still at school I should try to make detailed plans about my career.					
3. A good education is the only way of improving your standard of living.					
4. You can achieve anything you want provided you work hard enough.					
5. People in authority make rules for good reasons and therefore they should be obeyed and not questioned.					
6. Children should be given every encouragement to stay on at school.					
7. Staying on at school is a waste of time.					
8. Children should discuss their school work with their parents.					
9. As long as people do their best, it does not matter if they do not do as well as other people.					

My parents would:-

Strongly Agree	Agree	Have no feelings either way	Disagree	Strongly Disagree

10. Children should be encouraged to ask questions about and explore their surroundings.

11. People who do not take advantage of the opportunity to stay on at school are foolish.

Please indicate opposite each of the statements below whether each one is true of <u>your parents</u> by placing a tick (✔) in the appropriate box.

1.	My parents encourage me to talk about all the things that interest me.	True ☐	False ☐
2.	My parents always took it for granted that I would stay on at school.	True ☐	False ☐
3.	My parents do not particularly like the jobs they do.	True ☐	False ☐
4.	My parents never had the opportunity to stay on at school.	True ☐	False ☐
5.	My parents always stressed how important it was for me to stay on at school.	True ☐	False ☐
6.	My parents after leaving school went on to university, polytechnic or college.	True ☐	False ☐
7.	My parents would be disappointed if I did not have as good a job as they have.	True ☐	False ☐
8.	My parents want me to have a better job than they have had.	True ☐	False ☐

9. Could you please state below the jobs that your parents do at the moment.

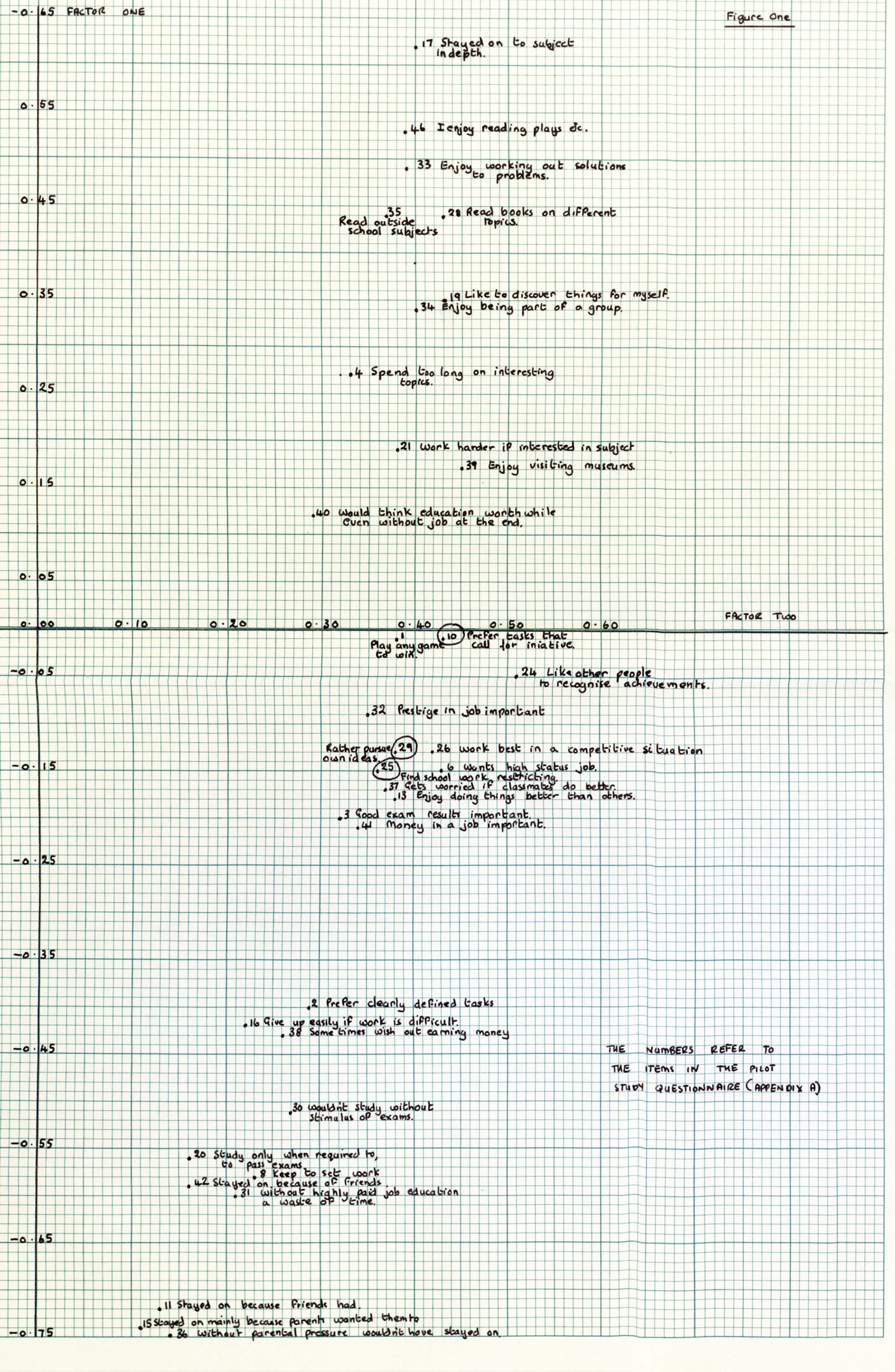
Father .....

Mother .....

A P P E N D I X B

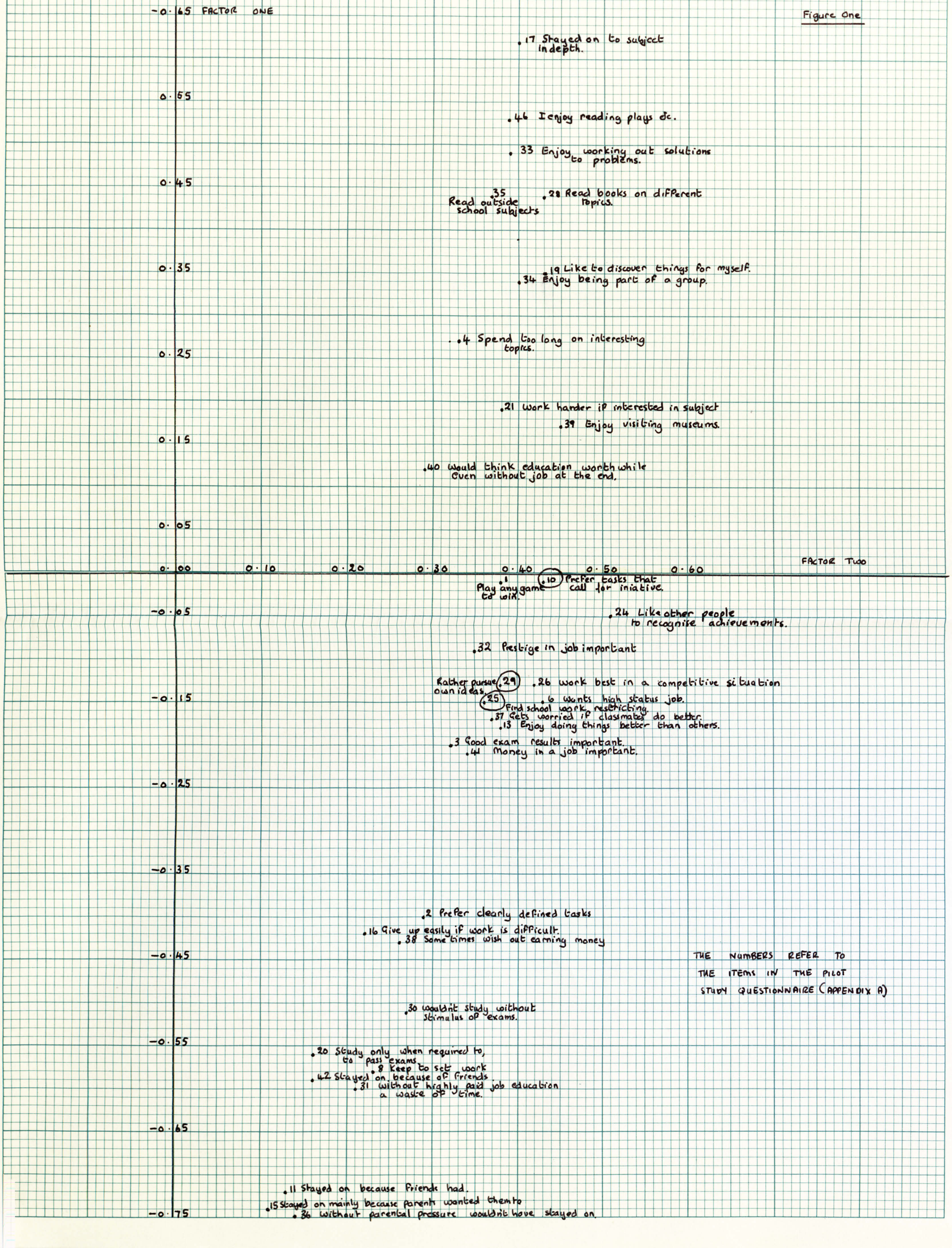
Factor structive diagrams and correlation matrixes from the pilot study analyses

Figure One



THE NUMBERS REFER TO THE ITEMS IN THE PILOT STUDY QUESTIONNAIRE (APPENDIX A)

Figure One



THE NUMBERS REFER TO THE ITEMS IN THE PILOT STUDY QUESTIONNAIRE (APPENDIX A)

Figure Two

		8	11	15	16	36	42
8	I try to keep to set work and avoid following up interesting sidelines.	1.0					
11	I decided to stay on in the sixth form because that was what most of my friends were doing.	0.42	1.0				
15	I stayed on in the sixth form mainly because my parents wanted me to.	0.33	0.55	1.0			
16	I get disheartened and give up easily if something is too difficult for me.	0.37	0.33	0.23	1.0		
36	Without pressure from my parents I don't think I would have stayed on at school	0.35	0.69	0.73	0.10	1.0	
42	I stayed on at school because I did not want to be different from my friends.	0.31	0.65	0.55	0.16	0.55	1.0
		3	6	31	38	40	41
3	Good exam results are the most important outcome of one's academic career.	1.0					
6	I would very much like to have a job which will give me high status within the community.	0.39	1.0				
31	If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	0.49	0.23	1.0			
38	I sometimes wish I was out at work earning money rather than studying.	0.25	0.25	0.18	1.0		
40 (-)	I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.	-0.44	-0.38	-0.56	-0.08	1.0	
41	How much money I could earn doing a job would be the most important factor in determining whether I would take it.	0.37	0.41	0.26	0.31	-0.39	1.0

FACTOR ONE

Alpha = 0.73

FACTOR TWO

Alpha = 0.75

Figure Three

		10	19	25	29
10	I prefer tasks that call for originality and initiative rather than those that are straightforward.	1.0			
19	I would rather be left to discover things for myself than have everything told to me by the teacher.	0.54	1.0		
25	I find school work restricting and would prefer more freedom of choice in the topics to be studied.	0.32	0.35	1.0	
29	I would rather pursue my own ideas than follow a syllabus.	0.30	0.37	0.48	1.0

FACTOR THREE

Alpha = 0.72

		8	17	20	30	31
8	I try to keep to set work and avoid following up interesting sidelines.	1.0				
17 (-)	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	-0.36	1.0			
20	I usually study only when I am required to, in order to pass exams.	-0.34	-0.32	1.0		
30	Without the stimulus of exams I doubt whether I would do much studying.	-0.31	-0.32	0.60	1.0	
31	If I could not get a highly paid job after finishing my education then I would feel that I had wasted my time.	-0.23	-0.39	0.35	0.29	1.0

FACTOR FIVE

Alpha = 0.73

Figure Four

		1	6	13	32	26	47
1	I play any game to win, not just for the fun of it.	1.0					
6	I would very much like to have a job which will give me high status within the community.	0.37	1.0				
13	I enjoy feeling that I can do things better than anybody else.	0.22	0.21	1.0			
32	How much prestige a job had would be the most important factor in determining whether or not I would take it.	0.07	0.44	0.28	1.0		
26	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	0.31	0.18	0.21	0.22	1.0	
47	Sex (male).	0.32	0.14	0.18	0.25	0.24	1.0

FACTOR SIX

Alpha = 0.65

		17	19	34	39	40	46
17	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	1.0					
19	I would rather be left to discover things for myself than have everything told me by the teacher.	0.33	1.0				
34	I enjoy being part of an enthusiastic group of people working on a project.	0.39	0.42	1.0			
39	I enjoy visiting museums, art galleries and exhibitions.	0.28	0.33	0.32	1.0		
40	I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.	0.13	0.21	0.19	0.13	1.0	
46	I enjoy reading plays, novels and poetry.	0.44	0.25	0.23	0.46	0.10	1.0

FACTOR ELEVEN

Alpha = 0.70

Figure Five

		17	19	34	39	40	46	4	28	35	33
17	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	1.0									
19	I would rather be left to discover things for myself than have everything told to me by the teacher.	0.33	1.0								
34	I enjoy being part of an enthusiastic group of people working on a project.	0.39	0.42	1.0							
39	I enjoy visiting museums, art galleries and exhibitions.	0.28	0.33	0.32	1.0						
40	I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.	0.13	0.21	0.19	0.13	1.0					
46	I enjoy reading plays, novels and poetry.	0.44	0.25	0.23	0.42	0.10	1.0				
4	I spend too long on certain topics, because I get very interested and involved in them,	0.27	0.25	0.13	0.03	0.20	0.10	1.0			
28	I like to read a lot of books covering widely differing subjects.	0.28	0.29	0.15	0.41	0.02	0.66	0.26	1.0		
35	I read a lot outside my school subjects,	0.28	0.25	0.15	0.23	0.07	0.55	0.26	0.66	1.0	
33	I enjoy working out the solution to a complicated problem just to prove to myself I can do it,	0.34	0.01	0.14	0.05	-0.01	0.16	0.14	0.42	0.22	1.0

GROUP ONE:

FACTOR ELEVEN PLUS OTHER ITEMS

Alpha = 0.76

Figure Six

		3	41	6	1	13	32	24	26
3	Good exam results are the most important outcome of one's academic career.	1.0							
41	How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.	0.37	1.0						
6	I would very much like to have a job which will give me high status within the community.	0.39	0.41	1.0					
1	I play any game to win, not just for the fun of it.	0.15	0.29	0.37	1.0				
13	I enjoy feeling that I can do things better than anybody else.	0.14	0.08	0.21	0.22	1.0			
32	How much prestige a job had would be the most important factor in determining whether or not I would take it.	0.23	-0.06	0.44	0.07	0.26	1.0		
24	I like other people to recognise my achievements.	0.23	0.12	0.31	0.19	0.19	0.18	1.0	
26	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	0.27	0.21	0.18	0.31	0.21	0.22	0.37	1.0

GROUP TWO:

FACTOR TWO COMBINED WITH FACTOR SIX

Alpha = 0.70

Figure Seven

		11	15	16	36	42	8	20	30	31	2
11	I decided to stay on in the sixth form because that was what most of my friends were doing.	1.0									
15	I stayed on in the sixth form mainly because my parents wanted me to.	0.55	1.0								
16	I get disheartened and give up easily if something is too difficult for me,	0.33	0.23	1.0							
36	Without pressure from my parents I don't think I would have stayed on at school.	0.69	0.73	0.10	1.0						
42	I stayed on at school because I did not want to be different from my friends	0.65	0.55	0.16	0.55	1.0					
8	I try to keep to set work and avoid following up interesting sidelines.	0.42	0.33	0.37	0.35	0.31	1.0				
20	I usually study only when I am required to, in order to pass exams.	0.24	0.28	0.30	0.28	0.20	0.34	1.0			
30	Without the stimulus of exams I doubt whether I would do much studying.	0.22	0.25	0.14	0.26	0.17	0.31	0.60	1.0		
31	If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	0.07	0.35	0.13	0.35	0.08	0.23	0.35	0.29	1.0	
2	When work is set I like to be given a clearly defined task, preferably with the reading I have to do specified.	0.14	0.15	0.17	0.16	0.13	0.23	0.17	0.10	0.32	1.0

GROUP THREE:

FACTOR ONE COMBINED WITH FACTOR FIVE

Alpha = 0.81

Figure Ten

		3	4	6	8	9	3	5	10	11	4	5	11
3	My parents do not particularly like the jobs they do.	1.0											
4	My parents never had the opportunity to stay on at school.	0.08	1.0										
6	My parents after leaving school went into higher education.	0.04	-0.47	1.0									
8	My parents want me to have a better job than they have had.	0.29	0.20	-0.08	1.0								
9	Father's occupation (working class).	0.29	0.41	-0.33	0.15	1.0							
3	I should not argue with adults.	0.04	0.16	0.00	0.08	0.15	1.0						
5	I should try to come out on top and be better than everybody else.	-0.02	0.05	0.02	0.07	0.08	0.37	1.0					
10	I should do what I thought was right irrespective of what other people say.	0.12	0.07	-0.04	0.16	0.02	0.02	0.35	1.0				
11	I should do what they (my parents) tell me because they know best.	0.04	0.11	0.11	0.06	0.02	0.62	0.59	0.19	1.0			
4	You can achieve anything you want provided you work hard enough.	-0.05	0.09	0.15	-0.17	0.18	0.26	0.38	0.33	0.20	1.0		
5	People in authority make rules for good reasons therefore they should be obeyed and not questioned.	-0.12	0.24	-0.09	-0.10	0.16	0.27	0.33	0.01	0.28	0.51	1.0	
11	People who do not take advantage of the opportunity to stay on at school are foolish.	-0.05	0.12	-0.10	-0.09	0.00	0.13	0.36	0.14	0.35	0.37	0.37	1.0

PARENTAL ATTITUDES, EDUCATION AND FATHER'S OCCUPATION

Alpha co-efficient = 0.69

ITEMS ON THE BI-POLAR FACTOR

Figure 8

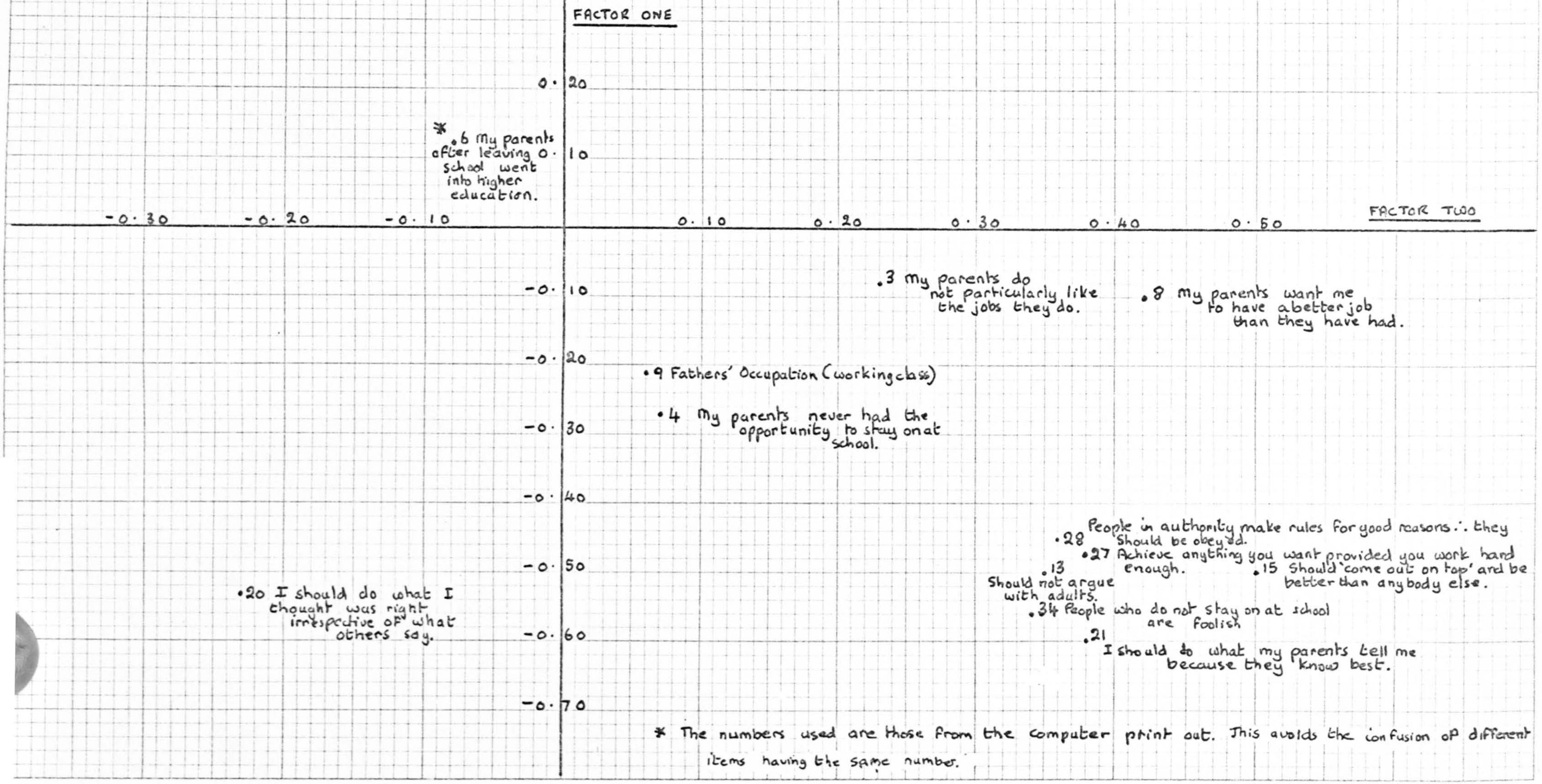
Item No	17	19	34	39	40	46	4	28	35	33	11	15	16	36	42	8	20	30	31	2
17	1.0																			
19	0.33	1.0																		
34	0.39	0.42	1.0																	
39	0.28	0.33	0.32	1.0																
40	0.13	0.21	0.19	0.13	1.0															
46	0.44	0.25	0.23	0.42	0.10	1.0														
4	0.27	0.25	0.13	0.03	0.20	0.10	1.0													
28	0.28	0.29	0.15	0.41	0.02	0.66	0.26	1.0												
35	0.28	0.25	0.15	0.23	0.07	0.55	0.26	0.66	1.0											
33	0.34	0.01	0.14	0.05	$\bar{0}.01$	0.16	0.14	0.42	0.22	1.0										
11	$\bar{0}.31$	$\bar{0}.16$	$\bar{0}.34$	$\bar{0}.01$	$\bar{0}.11$	$\bar{0}.31$	$\bar{0}.17$	$\bar{0}.24$	$\bar{0}.23$	$\bar{0}.47$	1.0									
15	$\bar{0}.60$	$\bar{0}.22$	$\bar{0}.25$	0.02	0.11	$\bar{0}.24$	$\bar{0}.30$	$\bar{0}.15$	$\bar{0}.14$	$\bar{0}.51$	0.55	1.0								
16	$\bar{0}.19$	$\bar{0}.03$	0.01	0.05	0.03	$\bar{0}.14$	0.06	$\bar{0}.08$	$\bar{0}.07$	$\bar{0}.30$	0.33	0.23	1.0							
36	$\bar{0}.43$	$\bar{0}.21$	$\bar{0}.24$	0.02	$\bar{0}.02$	$\bar{0}.25$	$\bar{0}.15$	$\bar{0}.15$	$\bar{0}.27$	$\bar{0}.38$	0.69	0.73	0.10	1.0						
42	$\bar{0}.32$	$\bar{0}.25$	$\bar{0}.31$	$\bar{0}.02$	0.11	$\bar{0}.16$	$\bar{0}.06$	$\bar{0}.10$	$\bar{0}.10$	0.28	0.65	0.55	0.16	0.55	1.0					
8	$\bar{0}.36$	0.03	$\bar{0}.01$	$\bar{0}.10$	0.16	$\bar{0}.41$	0.05	$\bar{0}.20$	$\bar{0}.16$	$\bar{0}.18$	0.42	0.33	0.37	0.35	0.31	1.0				
20	$\bar{0}.32$	$\bar{0}.12$	$\bar{0}.02$	$\bar{0}.15$	$\bar{0}.08$	$\bar{0}.27$	$\bar{0}.19$	$\bar{0}.22$	$\bar{0}.25$	$\bar{0}.28$	0.24	0.28	0.30.	0.28	0.20	0.34	1.0			
30	$\bar{0}.36$	$\bar{0}.10$	0.06	$\bar{0}.08$	$\bar{0}.10$	$\bar{0}.25$	$\bar{0}.10$	$\bar{0}.20$	$\bar{0}.10$	$\bar{0}.15$	0.22	0.25	0.14	0.26	0.17	0.31	0.60	1.0		
31	$\bar{0}.40$	$\bar{0}.22$	$\bar{0}.20$	$\bar{0}.24$	$\bar{0}.60$	$\bar{0}.33$	$\bar{0}.24$	$\bar{0}.24$	$\bar{0}.30$	$\bar{0}.20$	0.07	0.35	0.13	0.35	0.08	0.23	0.35	0.29	1.0	
2	$\bar{0}.04$	$\bar{0}.45$	$\bar{0}.04$	$\bar{0}.04$	$\bar{0}.20$	$\bar{0}.30$	$\bar{0}.23$	$\bar{0}.22$	$\bar{0}.40$	0.12	0.14	0.16	0.17	0.16	0.13	0.23	0.17	0.10	0.32	1.0

Items 17 - 33 Group One

Alpha co-efficient = 0.86

Items 11 - 2 Group Three

Figure 9. PARENTS ATTITUDES AND SOCIAL CLASS



* The numbers used are those from the computer print out. This avoids the confusion of different items having the same number.

A P P E N D I X C

Questionnaires used in the main study

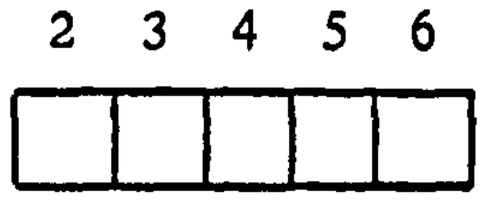
The Open University

Faculty of Educational Studies

Survey of Sixth

Formers' Attitudes

Card One



Best Copy
Available
Print bound close to the spine

Biographical Questionnaire

Please tick the appropriate box

B1 Sex Female [ ] 1 Male [ ] 2

B2 Age Years ..... Months .....

B3 Are you in your first year in the sixth form? [ ] 1

second year? [ ] 2

third year? [ ] 3

B4 Number of 'O' levels passed .....

B5 Are you taking any 'O' levels in the sixth form (other than re-sits)? If so how many .....

B6 Number of 'A' levels being taken .....

B7 Any other national examination being taken, please specify both the examination and the level at which it is being taken

.....

.....

.....

B8 Could you please indicate which subjects you are taking at 'A' level by putting a tick in the appropriate box opposite the choices given below. You should put a tick in the box if you are taking one or more of the subjects in the group given.

Mathematics

A. pure, applied or further mathematics [ ] 1

Sciences

B. chemistry, physics or biology [ ] 2

C. botany, zoology, geology [ ] 3

Languages

D. Welsh, Greek (classical and/or modern), Latin, French, German, Spanish, Russian [ ] 4

Performing Arts

E. music, art, drama [ ] 5

Humanities

F. English literature, history, ancient history, economic history, geography [ ] 6

Leave Blank

7

8, 9 [ ]

10

11, 12 [ ]

13, 14

Leave Blank

Social Sciences

G. economics, economics and politics, British constitution, sociology, psychology ☐ 7

Practical Subjects

H. needlework, home economics, metalwork, woodwork technical or engineering drawing, building construction ☐ 8

I. Other practical subjects ☐ 9

J. Religious instruction ☐ 10

K. General studies ☐ 11

L. Any other subject not given in choices A - K, above, please specify ..... ☐ 12

B9 After leaving school are you planning to:- Please tick the appropriate box 15

A. Go to University? ☐ 1

B. Go to Polytechnic? ☐ 2

C. Go to College of Education? ☐ 3

D. Go to Art, Music or Drama School? ☐ 4

E. Go straight into full-time employment? ☐ 5

F. Don't know ☐ 6

B10 If you ticked E in B9 do you intend to do any further training after leaving school connected with your full-time employment:

Yes ☐ No ☐ 16

B11 If so what kind of training Please tick the appropriate box 17

A. Apprenticeship ☐ 1

B. Day release ☐ 2

C. Night school ☐ 3

D. Any other please specify ..... ☐ 4

.....

B12 If you are planning to do something after leaving school that is not one of the options A to F given in question B9 could you please describe below what you intend to do. 18 ☐

.....

.....

Please indicate opposite each of the statements below whether each one is true or false of you by placing a tick (✓) in one of the three boxes opposite each statement. Only use the 'don't know' category if you really cannot decide.

					Leave Blank
M1.	I play any game to win, not just for the fun of it.	1 True ☐	3 False ☐	2 Don't know ☐	19
M2.	I prefer to be given a clearly defined task, preferably with any reading I have to do specified.	1 True ☐	3 False ☐	2 Don't know ☐	20
M3.	Good exam results are the most important outcome of one's academic career.	1 True ☐	3 False ☐	2 Don't know ☐	21
M4.	I spend too long on certain topics, because I get very interested and involved in them.	1 True ☐	3 False ☐	2 Don't know ☐	22
M5.	I would very much like to have a job which will give me high status within the community.	1 True ☐	3 False ☐	2 Don't know ☐	23
M6.	I try to keep to set work and avoid following up interesting sidelines.	1 True ☐	3 False ☐	2 Don't know ☐	24
M7.	I decided to stay on in the sixth form because that was what most of my friends were doing.	1 True ☐	3 False ☐	2 Don't know ☐	25
M8.	I enjoy feeling that I can do things better than anybody else.	1 True ☐	3 False ☐	2 Don't know ☐	26
M9.	I get disheartened and give up easily if something is too difficult for me.	1 True ☐	3 False ☐	2 Don't know ☐	27
M10.	I wanted to stay on in the sixth form because I wanted the opportunity to study certain subjects in more depth.	1 True ☐	3 False ☐	2 Don't know ☐	28
M11.	I would rather be left to discover things for myself than have everything told to me by the teacher.	1 True ☐	3 False ☐	2 Don't know ☐	29
M12.	I usually study only when I am required to, in order to pass exams.	1 True ☐	3 False ☐	2 Don't know ☐	30

		1 True	3 False	2 Don't know	Leave Blank
M13.	I like other people to recognise my achievements.	☐	☐	☐	31
M14.	I find I work best in a competitive situation, particularly if there is a good chance of coming out on top.	☐	☐	☐	32
M15.	I like to read a lot of books covering widely differing subjects.	☐	☐	☐	33
M16.	Without the stimulus of exams I doubt whether I would do much studying.	☐	☐	☐	34
M17.	If I could not get a highly paid job after finishing my education then I would feel I had wasted my time.	☐	☐	☐	35
M18.	How much prestige a job had would be the most important factor in determining whether or not I would take it.	☐	☐	☐	36
M19.	I enjoy working out the solution to a complicated problem.	☐	☐	☐	37
M20.	I enjoy being part of an enthusiastic group of people working on a project.	☐	☐	☐	38
M21.	I read a lot outside my school subjects.	☐	☐	☐	39
M22.	Without pressure from my parents I don't think I would have stayed on at school.	☐	☐	☐	40
M23.	I sometimes wish I was out at work earning money rather than studying	☐	☐	☐	41
M24.	I enjoy visiting museums, art galleries and exhibitions.	☐	☐	☐	42
M25.	I would still think my education had been worthwhile even if I could not get the job I wanted when I had finished.	☐	☐	☐	43
M26.	How much money I could earn doing a job would be the most important factor in determining whether or not I would take it.	☐	☐	☐	44

Please indicate opposite each of the statements below whether you tend to agree or tend to disagree with each one by placing a tick (✓) in one of the three boxes opposite each statement. Only use the 'don't know' category if you really cannot decide.

					Leave Blank
L1.	In the case of the well prepared student, there is rarely if ever such a thing as an unfair test.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	45
L2.	Who gets to be boss depends on who has the skill and ability luck has little or nothing to do with it.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	46
L3.	Leadership positions tend to go to capable people who deserve being chosen.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	47
L4.	People who don't do well in life often work hard but the opportunities just don't come their way.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	48
L5.	There really is no such thing as "luck".	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	49
L6.	Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	50
L7.	It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyway.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	51
L8.	In my case getting what I want has little or nothing to do with luck.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	52
L9.	Many times I feel that I have little influence over the things that happen to me.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	53
L10.	Unfortunately an individual's worth often passes unrecognised no matter how hard he tries.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	54
L11.	Most students don't realise the extent to which their marks are influenced by accidental happenings.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	55

					Leave Blank
L12.	This world is run by the few people in power and there is not much the ordinary person can do about it.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	56
L13.	Capable people who fail to become leaders have not taken advantage of their opportunities.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	57
L14.	Becoming a success is a matter of hard work, luck has little or nothing to do with it.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	58
L15.	Who gets to be boss often depends on who was lucky enough to be in the right place first.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	59
L16.	Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	60
L17.	There is a direct connection between how much effort I put into a piece of work and the mark I get for it.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	61
L18.	People will get ahead in life if they have the ability and do a good job; knowing the right people has nothing to do with it.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	62
L19.	It is hard to know why some people get leadership positions and others don't; ability doesn't seem to be the important factor.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	63
L20.	Most people don't realise the extent to which their lives are controlled by accidental happenings.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	64
L21.	I have often found out that what is going to happen will happen.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	65
L22.	Sometimes I feel I don't have enough control over the direction my life is taking.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	66
L23.	Many times we might just as well decide what to do by tossing a coin.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	67

				Leave Blank
It is impossible for me to believe that chance or luck play an important role in my life.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	68
As far as world affairs are concerned, most of us are victims of forces we can neither understand not control.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	69
In the long run people get the respect they deserve.	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	70
The average person can have an influence in government decisions	1 Agree ☐	3 Disagree ☐	2 Don't know ☐	71

Card Two 2 3 4 5 6

Below are a number of statements. Please indicate opposite each one how important you think these things are by placing a tick (✓) in one of the five boxes next to each statement.

		I think it is:-					Leave Blank
		of very great importance	of great importance	of some importance	of hardly any importance	of no importance	
21.	I should not argue with adults.	1	2	3	4	5	7
22.	I should make up my own mind about things.	1	2	3	4	5	8
23	I should try to 'come out on top' and be better than everybody else.	1	2	3	4	5	9
24.	I should do what I thought was right irrespective of what other people say.	1	2	3	4	5	10
25.	I should do what they (my parents) tell me because they know best.	1	2	3	4	5	11

Below are a number of statements. Please indicate how strongly you would agree or disagree with each of them by placing a tick (✓) in one of the five boxes next to each statement.

		I would:-					
		strongly agree	agree on the whole	have no feelings either way	disagree on the whole	strongly disagree	
26.	A good education is the only way of improving your standard of living.	1	2	3	4	5	12
27.	You can achieve anything you want provided you work hard enough.	1	2	3	4	5	13
28.	People in authority make rules for good reasons and therefore they should be obeyed and not questioned.	1	2	3	4	5	14
29.	People who do not take advantage of the opportunity to stay on	1	2	3	4	5	15

Below are a number of statements. Please indicate opposite each one how <u>important your parents</u> think these things are by placing a tick (✓) in <u>one</u> of the five boxes next to each statement.

	My parents think it is:-					Leave Blank
	of very great import-ance	of great import-ance	of some import-ance	of hardly any import-ance	of no import-ance	
P1. I should not argue with adults.	1	2	3	4	5	16
P2. I should make up my own mind about things.	1	2	3	4	5	17
P3. I should try to 'come out on top' and be better than everybody else.	1	2	3	4	5	18
P4. I should do what I thought was right irre-spective of what other people say.	1	2	3	4	5	19
P5. I should do what they (my parents) tell me because they know best.	1	2	3	4	5	20

Below are a number of statements. **Please indicate how strongly <u>your parents</u> would <u>agree</u> or <u>disagree</u> with each of them by placing a tick (✓) in <u>one</u> of the five boxes** next to each statement.

	My parents would:					
	strongly agree	agree on the whole	have no feelings either way	disagree on the whole	strongly disagree	
P6. A good education is the only way of improving your standard of living.	1	2	3	4	5	21
P7. You can achieve anything you want provided you work hard enough.	1	2	3	4	5	22
P8. People in authority make rules for good reasons and therefore they should be obeyed and not questioned.	1	2	3	4	5	23
P9. People who do not take advantage of the opportunity to stay on at school are foolish.	1	2	3	4	5	24

Please indicate opposite each of the statements below whether each one is true of <u>your parents</u> by placing a tick (✓) in the appropriate box. (If some of the questions are not appropriate for one of your parents, of if you don't know the answer, then leave the box blank.)

		Father		Mother		Leave Blank
		1 True	0 False	1 True	0 False	
S1.	My parents do not particularly like the jobs they do.	☐	☐	☐	☐	25
		1 True	0 False	1 True	0 False	
S2.	My parents never had the opportunity to stay on at school.	☐	☐	☐	☐	26
		1 True	0 False	1 True	0 False	
S3.	My parents, after leaving school, went on to university, polytechnic or college.	☐	☐	☐	☐	27
		1 True	0 False	1 True	0 False	
S4.	My parents want me to have a better job than they have had.	☐	☐	☐	☐	28

S5. Could you please give a brief description below of the jobs that your parents do at the moment. In your description would you please state the <u>industry</u> your parents are employed in, their <u>job</u> within that industry and the level of <u>responsibility</u> of their job.

Father .....

(a) ..... 29 ☐

Mother .....

(b) ..... 30 ☐

S6. To which social class would <u>you</u> say <u>your parents</u> belonged. Please put a tick (✓) in the appropriate box.

1.	Upper middle class	☐ 1
2.	Middle class	☐ 2
3.	Upper working class	☐ 3
4.	Working class	☐ 4
5.	Of no particular social class	☐ 5
6.	Don't know	☐ 6

31

Use this page to write a brief autobiography but imagine that you are writing it twenty years from now. Try to indicate the important and interesting kinds of things you would like to have happened to you by then. There is no special form that your answer should take, write just what you want to.

A P P E N D I X D

Instructions used for the administration of the questionnaires to the main sample

The following instructions were read out to the pupils participating in the main study.

General Introduction

This questionnaire has been designed to try to find out more about the attitudes of sixth-formers to certain aspects of the education system and to see how these are linked to attitudes which make up a more general 'outlook on life'; and also to look at some of the factors which may have influenced the formation of these attitudes. The most important use to which this kind of information can be put is, hopefully, to influence the teaching methods and the curriculum design of studies for sixth-formers so that they cater far more for individual needs, but in order to do this we have to find out what these needs are.

The questionnaire was designed initially on the basis of interviews with sixth formers and then further modified in the light of a 'pilot study' also carried out with sixth-formers.

The questionnaire is being filled in by about 1,000 sixth-formers altogether in comprehensive schools in England and Wales.

Specific Instructions

The questionnaire is divided up into six main sections.

1) The first one is a brief biographical questionnaire and some questions on what you may be planning to do after you leave school.

2) The second section is concerned with your attitudes towards work in the sixth form and also some questions on the reasons why you stayed on in the sixth form.

3) The third section is concerned with attitudes you have that make up a general outlook on life.*

4) The fourth section is concerned with the kinds of personal attributes that you think it is important for you to have, and also whether your parents think these are important.

5) The fifth section is again concerned with both your attitudes and your parents' attitudes that make up a general outlook on life.

6) The final section is a questionnaire on your parents' attitude towards education in relation to yourself.

There are instructions for filling in the questionnaire at the beginning of each section; could you please read these carefully. On pages 11, 14 and 15 you have to answer the questions giving your parents' views, so could you be especially careful to do this. There should be no problem, provided you read the instructions.

Finally, the questionnaire contains an open-ended section dealing with how you see yourself in twenty years' time. You should only allow yourself ten minutes to answer this section.

The number in the 'leave blank' column refers to the column number that will be used when the material is punched on to computer cards.

Any questions?

* This instruction refers to the Rotter questionnaire, which was administered but not analysed.

Completed Questionnaires

The instruction about what the pupils should do when they had finished filling in the questionnaire varied according to the organisation of the school. Usually pupils handed in the questionnaire and then left the room.

A P P E N D I X E

Scoring system for the variables used in the factor analysis and the regression analysis

1. Father's occupation - measured by the Registrar General's classification of occupations. All pupils whose fathers were either dead, unemployed or retired were excluded from the analysis.

2. Parents' education - questions S2 and S3. These were scored by giving 1 for true on both parts of question S2, and 1 for false on both parts of question S3. The question was therefore scored in the direction of low educational opportunity.

3. Parents' attitude towards jobs - questions S1 and S4. This was scored by giving 1 for true on both parts of question S4 and 0.5 for true on question S1 (these proportions are based on the factor score co-efficients). The question was therefore scored in the direction of job dissatisfaction and a desire for their children to do better.

4. Achievement of the pupils in the school.- This score was based on the number of 'O' levels already passed and the number of 'O' and 'A' levels being taken. To score this variable the following scale was constructed which is given in Table 12, page 104.

5. Parental attitudes (authoritarianism) - questions P1 to P9 (excluding P2 and P4). Each question was scored on a five-point scale which ranged from "of very great importance" (score 1) to "of no importance" (score 5); thus the scale was scored in the direction of non-authoritarianism.

6. Pupil's attitudes (authoritarianism) - questions C1 to C9 (excluding C2 and C4). Scored in the same way as the parental attitude scale.

7. Intrinsic Motivation. The score was worked out by giving 2 for "true", 1 for "don't know" and 0 for "false", summed in the following way (the numbers refer to the items in the motivation questionnaire): 10 + M4 + M10 + M11 + M15 + M19 + M20 + M21 + M24 + M25 - M2 - M6 - M9 - M12 - M16 giving a maximum score of 28. The scale was scored in the direction of high intrinsic motivation.

8. Extrinsic Motivation I. The score was worked out by giving 2 for "true", 1 for "don't know" and 0 for "false", summed in the following way: M1 + M3 + M5 + M8 + M13 + M14 giving a maximum score of 12. The scale was scored in the direction of high extrinsic motivation.

9. Extrinsic Motivation II. The score was worked out by giving 2 for "true", 1 for "don't know" and 0 for "false", summed in the following way: M18 + M17 + M23 + M26 giving a maximum score of 8. The scale was scored in the direction of high extrinsic motivation.

10. Product variable. This was scored by multiplying together the scores on the achievement scale with the score on the intrinsic motivation scale and then dividing the result by ten so that the range of scores was more in line with other variables: one variable with a larger range than the other variables in a discriminant analysis can sometimes distort the analysis.